TROPICAL DISEASES BUREAU.

TROPICAL DISEASES BULLETIN.

Vol. 21.] 1924 [No. 6.

MEDICAL ZOOLOGY.

JEPPS (Margaret W.). **Protozoa of the Human Mouth in Malaya:** *Entamoeba gingivalis* **and** *Trichomonas* **sp.**—*Parasitology.* 1923. Nov. Vol. 15. No. 4. pp. 343–347. With 5 figs. [7 refs.]

The author examining scrapings from the gum base of the teeth of 50 Indian and Chinese coolies found *Entamoeba gingivalis* in 28 and Trichomonas in 16; but half the cases were examined only once, and organisms are not—and in this series were not—always found at the first examination. *E. gingivalis* has an exceptionally clear cytoplasm, which also appears viscous or adhesive, so that as the creature moves forwards its after part gets drawn out into a tail or tags; notwithstanding the clarity of the cytoplasm, the nucleus, which is very much like that of *E. histolytica*, is seldom visible in life, being obscured by contents of food-vacuoles; the inclusions consist of bacteria and remains of nuclei of leucocytes, red corpuscles were never seen. The Trichomonas is much more actively amoeboid than the intestinal species; its surface, but particularly the after end, may be irregularly rippled with considerably persistent pseudopodia, or drawn into a tail-like wisp or wisps.

A. Alcock.

WILLIS (H. Hastings). **A Note on Intestinal Protozoal Cysts in Man at Townsville, North Queensland.**—*Med. Jl. Australia.* 1923. Dec. 29. 10th Year. Vol. 2. No. 26. p. 682.

In the course of a hookworm campaign in the city of Townsville, 440 specimens of faeces, selected as representative of a collection of 9,441 specimens, were examined—all within 48 hours of being voided—for cysts of Protozoa, etc. Cysts were found in 208 of the 440. The cysts observed were, in their several percentage of the whole 440 specimens examined: *Giardia intestinalis* 19, *Entamoeba coli* 16, *Entamoeba histolytica* 1, iodine cysts 2, *Blastocystis hominis* 25. Various

multiple infections were observed in fifty-six instances. The infestation by age-groups is shown in the following table :—

Age, years.	No. Exd.	G. intestinalis.	E. coli.	E. histolytica.	I. cysts.	Blastocystis.
Under 6	96	35	5	0	0	22
6–18	155	40	31	0	5	44
19–40	143	7	29	4	1	35
41–60	43	1	5	1	1	8
Over 60	3	1	0	0	0	0

A. A.

Boeck (William C.) & Stiles (Ch. Wardell). **Studies on Various Intestinal Parasites (especially Amoebae) of Man.**—*U.S. Public Health Service, Treasury Dept. Hygienic Laboratory. Bull. No.* 133. Washington. 1923. Oct. pp. xxvi + 198. With 80 figs. [60 refs.].

This is one of the numerous progeny begotten by War upon fear of infection from repatriated troops, especially of intestinal protozoon infections. It contains a review of recent and familiar work on the prevalence of these infections—and also of their prevalence apart from any special military influences—in England, and the details of a survey of the same aspects of the subject in the United States of America. From this survey it appears that the ratio of these infections was found to be higher in America than in England [which is almost what one would expect from the greater prevalence in the former country of extensive tracts where sanitation is of the rural sort]. It also contains much useful technical information upon the manipulation and examination of faeces, and descriptions and plentiful figures of the commoner intestinal Protozoa ; but 4 of the plates bear neither number nor legend. Of the 198 pages, 73 are devoted to the interminable subject of nomenclature. There are some interesting observations on the vitality—as judged by reaction to eosin stain—of cysts : in stools washed free of bacteria and their products and then treated with distilled water cysts remained alive for months, and cysts of *E. histolytica* appeared to retain life for five days in a 5 per cent. solution of formalin. The thermal death-point for cysts of *E. histolytica* was observed to be 68° C. ; for those of *Giardia "lamblia"* 64° C.

A. A.

Hegner (Robert W.). **Infection Experiments with Trichomonas.**—*Amer. Jl. Hyg.* Baltimore, 1924. Mar. Vol. 4. No. 2. pp. 143–151. [9 refs.]

The experiments here recorded in adequate detail were based on 24 stock white rats, 12 of which were kept as controls, and one wild rat. In the ordinary routine an individual rat was kept secluded without food for 18 to 36 hours and was then supplied with a little milk rich in active forms of *Trichomonas muris* ; subsequently, at an interval varying from half-an-hour to 29 hours, the rat was killed and the contents of its stomach, caecum, and of selected portions of its small intestine were examined. The results of these examinations satisfy the author that *Trichomonas muris* in the active flagellar stage can

pass unhurt from the mouth to the caecum of the rat. The wild rat was submitted to an operation that permitted the contents of its caecum to be removed, thoroughly examined, and pronounced free from *Trichomonas muris*. Milk containing the active flagellates was then thrown into its stomach by catheter, and similar milk was placed in its cage and was consumed by it soon after its recovery from the operation. It was thereafter kept and carefully nourished for 4 days, and then killed, when samples taken from its caecum were found to contain large numbers of *T. muris* of various sizes. From these observations, in conjunction with the facts that *Trichomonas hominis* is remarkably tenacious of life outside its host's intestine and has never been found, authentically, in the encysted stage, the author justifies the conclusion that the mode of infection of man is analogous with that of the rat.

A. A.

Franchini (G.). **Sur des cultures très anciennes de flagellés.**—*Bull. Soc. Path. Exot.* 1924. Jan. 9. Vol. 17. No. 1. pp. 32–35.

In this author's experience blood-bouillon and latex-bouillon are specially favourable media for the cultivation of certain flagellates. He has observed Herpetomonas in latex-bouillon cultures as much as 11 months old, and *Trypanosoma cruzi* in such cultures at 10 months. In these old latex-bouillon cultures encysted forms and forms apparently on the way to encystment are sometimes found. He has had much the same experiences with blood-bouillon cultures.

A. A.

Becker (Elery R.). **Transmission Experiments on the Specificity of *Herpetomonas muscae-domesticae* in Muscoid Flies.**—*Jl. Parasit.* 1923. Sept. Vol. 10. No. 1. pp. 25–34. [5 refs.]

The author's investigations show that the type of Herpetomonas known as *H. muscae domesticae* can occur, naturally, in *Phormia regina, Lucilia sericata, Sarcophaga bullata, Cochliomyia macellaria* and *Calliphora erythrocephala* as well as in *Musca domestica*. His experiments, here recorded in sufficient detail, show that the Herpetomonas from any one of these 6 species taken in nature can infect clean laboratory-bred individuals of the other 5 species, and that such laboratory-infested individuals then become "carriers" infective to individuals of other species. And his "extremely probable" inference is that *H. muscae domesticae, H. luciliae, H. calliphorae, H. sarcophagae* and the Herpetomonas from Phormia and Cochliomyia "all represent the same species." The author's work gives pause to the easy assumption that a form found in a specific host where it had not before been observed must necessarily be a new species.

A. A.

Taliaferro (William H.). **A Reaction Product in Infections with *Trypanosoma lewisi* which inhibits the Reproduction of the Trypanosomes.**—*Jl. Experim. Med.*. 1924. Jan. 1. Vol. 39. No. 1. pp. 171–190. With 4 figs. [2 refs.]

In the author's experiments, when trypanosomes (*T. lewisi*) were injected into the blood of a susceptible rat along with serum from a rat

that was in the full tide of a trypanosome infection, the trypanosomes did not "reproduce" for at least 13 days (beyond which the observasions were not carried); whereas when trypanosomes from the same source were injected along with normal serum, "reproduction" in the blood of the susceptible rat began two days afterwards. The author therefore infers that the serum of rats fully infected with *T. lewisi* contains something obstructive to the trypanosome—a reaction product.

The author estimates the "reproduction" of the trypanosome by serial observations of the blood of a rat during the course of an experimental infection. If in a given sample of the series there be great variability in the size of the trypanosomes observed, reproduction is active; if there be no such variability reproduction has ceased.

A. A.

Ponselle (A.). **La culture de *Trypanosoma inopinatum*. Trypanosome pathogène de la grenouille.**—*Ann. Parasit. Humaine et Comparée.* Paris. 1923. June. Vol. 1. No. 2. pp. 155–158. With 1 fig. [4 refs.]

The author succeeded in culturing *T. inopinatum* by adding a drop of heart blood from an infected *Rana esculenta* to a medium consisting of equal parts of defibrinated rabbit's blood and of water twice distilled, inactivated at 56°C. for 30 minutes. The next day, Crithidia were found in a state of active multiplication: 4 days later these forms were numerous and were found either in rosettes or isolated; in 10 to 15 days the cultures were extremely rich. All the inoculated tubes succeeded and blood cultures were easily made. *Rana esculenta* inoculated with fourteenth and nineteenth sub-cultures became infected, but *Rana temporaria* proved resistant, just as it had previously been shown by Brumpt to be resistant to the bites of infested leeches, although it could be infected by direct inoculation of infected blood. The conditions under which *T. rotatorium* and *T. inopinatum* can be cultured are quite distinct. If the two trypanosomes be inoculated into tubes, one containing blood bouillon with a Ph content of 6.3 and the other equal volumes of blood and distilled water, it is found that only *T. rotatorium* will grow in the former and only *T. inopinatum* in the latter.

W. Yorke.

Kudicke (R.) & Evers (E.). **Ueber den Einfluss von Zuckerarten und Alkoholen der Zuckerreihe auf die Beweglichkeit der Trypanosomen in vitro.** [The Influence of Various Sugars and their Alcohols on the Motility of Trypanosomes in vitro.]—*Ztschr. f. Hyg. u. Infektionskr.* 1924. Vol. 101. No. 3. pp. 317–326. [10 refs.]

This paper contains the results, tabulated, of experiments to determine the influence of different sugars and their alcohols upon the motility of trypanosomes *in vitro*. Of the numerous solutions tried those of glucose, mannose, levulose and maltose were found to be most favourable to trypanosomes; they retained their motility for 6 hours (at 37°C.) in solution of glucose varying in strength from 1 in 200 to 1 in 3,000, and in solutions of mannose, levulose, and maltose varying in strength from 1 in 100 to 1 in 3,000. A certain proportion of trypanosomes retained vitality in solutions of glycerine, 1 in 50 to 1 in

400, even up to 6 hours ; and of galactose (1 in 50 to 1 in 100), of sorbite (1 in 50 to 1 in 400), and of lactose (1 in 100 to 1 in 1,000) for one hour.

A. A.

MAZZA (Salvador). **Sur la durée de l'immunité relative dans le paludisme des oiseaux.**—*Arch. Inst. Pasteur d'Algérie.* 1923. Dec. Vol. 1. No. 4. pp. 609–611.

The brothers SERGENT, by a very large series of experiments, have established the facts that after a primary acute stage 70 per cent. of canaries surviving a Proteosoma infection retain for a long time a chronic infection, with a possibility of mild and irregular relapses ; that during this chronic stage the blood is infective, although parasites cannot be found in it ; and that if in this stage a bird be re-inoculated the result, as apparent in the peripheral blood, is little, or is nothing at all and justifies the inference that the bird has acquired a certain amount of immunity such as is attributed to old settlers in a malarious country.

The present author records here the results of some experiments with three such canaries, one of which had been infected $4\frac{2}{12}$ years (or $4\frac{7}{12}$ years) and the other two $3\frac{3}{12}$ years before. Of two fresh birds inoculated from the plus four-years' canary one took a mortal infection and the other was unaffected. The two $3\frac{3}{12}$ years' birds being re-inoculated took infection just like fresh birds—they at least had not acquired any immunity. (The blood of these two $3\frac{3}{12}$ birds was also tested and found to be wanting in any power to confer immunity on fresh birds.)

A. A.

CASTEX (Mariano R.) & GREENWAY (Daniel). **Coccidiasis humana por** *Isospora hominis*. [Coccidiosis in Man—*Isospora hominis*.]—Reprinted from *La Prensa Medica Argentina*. 1923. Aug. 20. 11 pp. With 3 figs. [7 refs.]

A summary of human coccidiosis is given with an account of Eimeria and Isospora and a brief review of recorded cases. The authors recognise three distinct clinical types : hepatic, intestinal (with definite dysenteric symptoms), and faecal. The last is benign, giving rise to no definite symptoms except the presence of oocysts in the stools and an eosinophilia. The additional case here recorded was a man of 34 years passing the oocysts (31·75 microns in length, 13·15 in width) in large numbers. His blood showed 14 per cent. eosinophiles. Capsules of narsenol [dose not stated] were given for ten days, by which time the eosinophilia fell to 5·66 per cent. and the parasites were no longer discovered in the faeces.

H. Harold Scott.

PHISALIX. **Coccidiose intestinale de la Vipère aspic à** *Cyclospora Viperae* **n. sp.**—*Bull. Soc. Path. Exot.* 1923. Nov. 14. Vol. 16. No. 9. pp. 637–642. With 2 figs. [2 refs.]

Vipera aspis is very frequently infected as to the anterior two-thirds of its intestine with Coccidia of two species ; and [for those who do not object to venomous snakes] new-born vipers are most choice material for the experimental study of these coccidia since they can be so easily and directly infected.

A. A.

i. Franchini (G.). **Sur un protozoaire d'*Euphorbia cereiformis* et sur sa culture.**—*Bull. Soc. Path. Exot.* 1923. Nov. 14. Vol. 16. No. 9. pp. 642–646. With 3 figs. [3 refs.]

ii. ——. **Inoculation de flagellés d'insectes dans le latex des Euphorbes.**—*Ibid.* pp. 646–650. [2 refs.]

iii. ——. **Sur un flagellé particulier d'une Urticacée** (*Ficus benjamina*). —*Ibid.* pp. 650–652. With 1 fig. [1 ref.]

iv. ——. **Sur un flagellé d'une Asclépiadacée** (*Arauja angustifolia*).— *Ibid.* pp. 652–655. With 2 figs.

v. ——. **Nouvelles recherches sur les protozoaires des plantes à latex.** —*Ibid.* pp. 655–659. With 3 figs. [1 ref.]

i. In the latex of an obviously sick plant of *Euphorbia cereiformis* the author found a small, round or oval, non-flagellate protozoon exhibiting amoeboid movement. He succeeded in cultivating it in latex-bouillon and thence in blood-bouillon and human-blood-agar. In all three media it developes a flagellum ; but in all three the size and form of the organism is different.

ii. The same author succeeded in infecting certain species of Euphorbias with intestinal flagellates of certain flies and Pentatomid bugs. The infected plants suffered obvious pathological changes and the introduced flagellates became leishmaniform.

iii. In the latex of 4 plants of *Ficus benjamina* the same author has found a Herpetomonas or Leptomonas-like flagellate which multiplies by not quite equal binary fission. The plants appeared healthy.

iv. In an Asclepiad plant, *Arauja angustifolia*, the same author has discovered a Herpetomonas differing from that described from plants of the same species in South America. The plant was mortally sick.

v. The author along with some further descriptions of Protozoon parasites of plants sums up the observations and conclusions of his numerous observations in this field. He emphasizes the discovery of many forms of Protozoa besides *Leptomonas davidi* in Euphorbiaceae, particularly the cactus-like Euphorbias, and he is convinced that these Protozoa are widely distributed in the vegetable kingdom, and are to be found not only in sickly plants but also in those that are healthy.

A. A.

Dogiel (V.). [In Russian and English.] **The Transformation of the Male Pronucleus in a Spermatozoon in Certain Infusoria during their Conjugation.**—4 pp. with 1 text fig. 1923. July 8.

The process of conjugation in *Cycloposthium bipalmatum*, a ciliate inhabiting the intestine of the horse, is described and figured. The remarkable features of the process are that, in each conjugating ciliate, of the two first-formed daughter micronuclei one perishes entirely, while by the bipartition of the other are formed a "female pronucleus" and a "male pronucleus" that in all its details comes to resemble "a typical spermatozoon." The two conjugating ciliates exchange "spermatozoa," the "spermatozoon" in each case passing out through the body-wall of one conjux at a definite point, and passing in at the mouth of the other.

A. A.

Dogiel (V.). **Cellulose als Bestandteil des Skelettes bei einigen Infusorien (Vorläufige Mitteilung).**—*Biol. Zentralblatt.* 1923. May 31. Vol. 43. No. 3. pp. 289–291.

Hitherto animal cellulose has been regarded as a peculiar property of certain Tunicates; the present author describes its discovery in the subcuticular skeletal plates first of Ophryoscolex from the stomach of *Bubalis cookei* and afterwards from other ciliates of the same family inhabiting the digestive tract of other Ungulates in Europe.

A. A.

i. Rodhain (J.). **Trypanosome d'un Cheiroptère insectivore** *Nycteris hispida* **Schreber au Congo belge.**—*Bull. Soc. Path. Exot.* 1923. Nov. 14. Vol. 16. No. 9. pp. 659–663. With 1 fig. [7 refs.]

ii. Haupt (Walther). **Untersuchungen ueber die Pathogenität der** *Trichomonas vaginalis.*—*Muench. Med. Woch.* 1924. Feb. 15. Vol. 71. No. 7. p. 204. [15 refs.]

iii. Hoare (Cecil A.). **A Note on the Specific Name of the Herpetomonad of the House-Fly.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923. Dec. 13. & 1924. Jan. 17. Vol. 17. Nos. 6 & 7. pp. 403–406. [9 refs.]

iv. Miguez (Conrado). **Breve comunicación sobre un protozoario flagelado que hemos encontrado en lesiones papulosas de la piel en el hombre.**—*Rev. Inst. Bacteriolog.* 1923. Dec. Vol. 3. No. 3. pp. 95–98. With 1 fig.

v. Knowles (R.) & Das Gupta (B. M.). **A Note upon a Flagellate Protozoon found in the Saliva.**—*Indian Jl. Med. Res.* 1924. Jan. Vol. 11. No. 3. pp. 737–741. With 11 figs. [2 refs.]

i. *Trypanosoma heybergi*, the new species described by the author from a bat, is of an almost filiform attenuation at both ends, more gradually so at the anterior end, where there is no free flagellum. In the gut of 4 of 63 acarines (Leiognathus) parasitic on the bat crithidia and trypanosome forms were observed.

ii. Reviewing observations upon this subject published in Germany during the last few years, the author concludes that in all probability *Trichomonas vaginalis* is a harmless parasite present both in health and disease.

iii. After a careful survey of the recorded history of the species the author justly concludes that the correct name of the herpetomonas of the house-fly is *Herpetomonas muscarum* (Leidy) Kent.

iv. The organism figured appears to be a Bodo and therefore of doubtful significance.

v. A Bodo apparently close to *B. edax* found in the saliva in a case of spleno-medullary leucaemia, but not supposed to be in any way pathogenic.

A. A.

Dye (W. H.). **Parasitic Mites on Mosquitoes.**—*Jl. Roy. Army Med. Corps.* 1924. Feb. Vol. 42. No. 2. pp. 87–102. With 13 text figs.

When collecting mosquitoes in northern Nyasaland the author was struck with the frequency with which the females of certain species were infested by larval mites. Of hundreds of mosquitoes collected, about 50 per cent. of the females of *Mansonia uniformis*, about 45 per cent. of those of *Anopheles paludis*, and about 10 per cent. of those of

A. pharoensis during the rainy season, and about 5 and 2 per cent. respectively of those of the first two species during the cold season, were found to be thus infested. Of all the other species of the locality (2 Anopheles, 5 Culex, and *Stegomyia fasciata*) none was ever found infested, except one individual *Culex fatigans* attacked by a single mite. It is a significant fact that these mites were not once observed on a male of any species.

The author followed out the main points in the life-history of these mites and found that when removed from their mosquito host they very soon died unless they were placed in water. When placed in water, or when the dead host was placed in water, particularly during the dry season, they soon became active and ultimately attained the adult stage.

[It is clear from his excellent descriptions and figures that the author is dealing, as he supposes, with water-mites. The larvae of water-mites are well known to attach themselves to mosquitoes and other insects that pass the early stages of their existence in water. Nathan Banks is of opinion that in doing so " they have made a serious mistake . . . . .without suspecting the suicidal result " of attachment to an insect whose future lies on land and in the air. But the facts observed by Captain Dye, namely, the exclusive choice of the female mosquito by the larval mite, and the greatly preponderant percentage of mite-infested females of particular species during the rainy season, justify the inference, in this particular case, that the mosquitoes above specified may play an important part in the seasonal dissemination of the mite.]

A. A.

Langrishe (J. du P.). **Mosquitoes in Bermuda.**—*Jl. Roy. Army Med. Corps.* 1924. Feb. Vol. 42. No. 2. pp. 103–120. With 9 text figs. & 1 map. [6 refs.]

A very good and useful account of the mosquitoes of Bermuda, their habits and breeding places, and the existing and prospective methods of suppressing them. Four species are present, namely *Culex fatigans*, *Stegomyia fasciata*, *Aëdes sollicitans* and *Ae. taeniorhynchus*. There are no streams or ponds in Bermuda, but there are some coastal salt marshes and brackish swamps, and these are the breeding-grounds of the last two species ; while the first two species are well provided for in the rainwater stored everywhere for domestic use (which is all the water-supply of the islands), and also in " many thousands of discarded bottles, cans, etc., scattered all over " the country. *Culex fatigans* often finds still further accommodation in the cess-pits and privies of the civilian population.

A. A.

MacGregor (M. E.). **Malaria and** *Anopheles funestus* **in Mauritius.** —*Nature.* 1923. Dec. 29. Vol. 112. No. 2826. pp. 934–936.

To the three species of Anopheles observed in Mauritius, in 1908, by Ross, namely, *A. costalis*, *A. mauritianus* and *A. maculipalpis* (the last infrequently), the author now adds *A. funestus*, which, as well as *A. maculipalpis*, he found in abundance. In Mauritius the larvae of *A. funestus* when alarmed may sometimes climb up leaves that dip into the water.

A. A.

LEGENDRE (J.). **Des variations dans le trophisme des Culicides.**—*C. R. Acad. Sci.* 1924. Jan. 21. Vol. 178. No. 4. pp. 423–425. [1 ref.]

Some observations showing that the food preferences of certain species of mosquitoes are not more precise than the terms of Falstaff's honour :—

Stegomyia fasciata feeding on a cat where man is procurable. *Anopheles maculipennis* feeding on man where rabbits are available. *A. squamosus* and *pharoensis* feeding on horses where men are plentiful. *Culex pipiens* and *hortensis* coming into houses in a particular locality and biting people in the autumn of one year, and not being seen in houses in that locality in summer or autumn two years afterwards, although their larvae and pupae were still to be found in the same breeding-places of the locality. [There is nothing unfamiliar in these observations, which, however, it is perhaps necessary to record.]

A. A.

BULL (Carroll G.) & REYNOLDS (Bruce D.). **Preferential Feeding Experiments with Anopheline Mosquitoes, II.**—*Amer. Jl. Hyg.* Baltimore. 1924. Mar. Vol. 4. No. 2. pp. 109–118. With 1 fig. [3 refs.]

The experiments here described in detail are a continuation and completion of those already summarized in this *Bulletin* (Vol. 21, pp. 143–4) ; they were carried out in conformity with that first series of experiments and with the same species of Anopheles—*A. quadrimaculatus*. The insects were bred from pupae and large larvae collected on a great scale. The animals used for bait were man, horse, cow, dog, pig, sheep, goat, cat, rabbit, fowl. The conclusions are (for the stock of *A. quadrimaculatus* used) that although man cannot be wholly protected, assaults upon him may be greatly abated by the immediate presence of domestic animals, and therefore that in places where malaria is just upheld it would be quite possible to break the parasite-cycle by increasing the number of domestic animals—particularly horses, cows, and dogs—in proximity to human domiciles, especially at night ; that as regards the horse and the cow (which were observed, generally in that order, to be the most alluring animals) and also as regards man (who came next) the mosquitoes showed decided preferences for individuals ; and that the insects would scarcely touch fowls and rabbits even when there was no other bait.

A. A.

BARBER (M. A.) & HAYNE (T. B.). **Some Notes on the Relation of Domestic Animals to Anopheles.**—*Public Health Rep.* 1924. Jan. 25. Vol. 39. No. 4. pp. 139–144. [3 refs.]

Some interesting experiments made at different seasons of the year, in Arkansas and Georgia, to ascertain the food predilections of *Anopheles quadrimaculatus* and *crucians* are here described in detail. Pigs and men and pigs and rabbits were exposed to attack at the same times and under identical conditions. The experiments reveal that these two species of Anopheles " show no special predilection for domestic animals over men when such factors as size and amount of exposure are excluded," and " little evidence that the Anopheles . . . have become zoophilic in the sense of Roubaud."

A. A.

Barber (M. A.) & Hayne (T. B.). **Some Observations on the Dispersal of Adult Anopheles.**—*Public Health Rep.* 1924. Feb. 1. Vol. 39. No. 5. pp. 195–203. [4 refs.]

Roubaud concluded from his observation of *A. maculipennis* that the population of an Anopheles resting-place is quickly renewed. The authors have confirmed this conclusion by observation of *A. quadrimaculatus* and *crucians*. In experiments here described in detail they stained (by spraying with eosin or with methylene blue) the Anopheles crowded in particular shelters, and examined catches made at random in those shelters at intervals during the next few days: they found that on the sixth day after the staining operation the catch did not contain any stained individuals—or perhaps 1 in a catch of 1,156 insects. Replacement of the population was practically as brisk and complete in shelters that afforded a blood-feed as in those that did not. Very very few stained Anopheles were ever found again elsewhere in the vicinity. Anopheles (*quadrimaculatus*) kept trapped in a large resting-place of their own choice suffered a very high mortality, even when the place contained an animal suitable for food—about six days was the limit of their existence. Observations were made on the power of flight of Anopheles: hundreds of individuals were found in a barn about a mile distant from the nearest water, but beyond that distance the numbers found were very small. [From all these observations it must be inferred that the adult life of *A. quadrimaculatus* and *crucians* in the summer season is very brief] and, as the authors imply, that the harmful powers of these two species, in the area of observation, are much limited.

A. A.

Barber (M. A.), Komp (W. H. W.) & Hayne (T. B.). **Some Observations on the Winter Activities of Anopheles in Southern United States.**—*Public Health Rep.* 1924. Feb. 8. Vol. 39. No. 6. pp. 231–246. [5 refs.]

Anopheles crucians, punctipennis and *quadrimaculatus,* in the southern parts of Georgia, Alabama, and Louisiana, may continue in full sexual activity in winter, though the development of ova, larva, and pupa is retarded; therefore any winter attack on them must include the larva as well as the adult. The adults are widely dispersed in winter, not concentrated; therefore they must be attracted to their destruction, though traps baited with pigs do not hold out much hope of success.

A. A.

Bonne (C.). **Remarques sur les *Cellia* sud-américaines.**—*Bull. Soc. Path. Exot.* 1924. Feb. 13. Vol. 17. No. 2. pp. 132–137. With 1 fig. [3 refs.]

The interdistinctive features of *Anopheles* (*Cellia*) *argyrotarsis* and *tarsimaculatus* are by no means conspicuous, and numerous intermediate forms have from time to time been described as new species. The author thinks that the recognition of some of these intermediate forms or varieties may be something more than a matter of taxonomic importance, since in Dutch Guiana he has observed that the Anopheles which enters houses and attacks man on the coast is a variety of *tarsimaculatus,* whereas the typical *tarsimaculatus* found up country

restricts its attention to cattlesheds and never goes into houses. [Recent papers (see *e.g.*, this *Bulletin*, Vol. 21, p. 143) seem to indicate that too much is being made of these supposed exclusive preferences of Anopheles.]

A. A.

Rodenwaldt (Ernst). **Entomological Notes No. II.**—*Meded. Burgerlijk. Geneesk. Dienst in Nederl.-Indië.* 1923. Part 3. pp. 299–304. With 1 map. [1 ref.]

In these notes the local distribution of *A. ludlowi*, *rossi*, *aconitus*, *fulginosus* and *annulipes* is mapped and recorded. Reasons are given for suspecting *A. maculatus*, which has hitherto been supposed to be harmless in the Dutch East Indies, to be a dangerous carrier of malaria in the island of Alor [off Timor]. A larva monstrosity of *A. fulginosus* with two pairs of fans on the individual abdominal segments and thorax is described. Mahulete's observation that brown larvae of *A. barbirostris* become males, and black or dark larvae females, is confirmed. *A. barbirostris* was observed to be very much a house-haunting species in several of the large islands around Timor.

A. A.

Vialatte (Ch.). **Contribution à la recherche de l'aire de dispersion de *Stegomyia fasciata*. Son existence à Marrakech.**—*Arch. Inst. Pasteur d'Algérie.* 1923. Dec. Vol. 1. No. 4. pp. 688–690. With 1 text fig. [1 ref.]

Records the existence of *Stegomyia fasciata* in Marakesh (Morocco). This city is about 100 miles from the coast with arid country intervening. In 1922 the rainfall was barely 15½ inches, spread over 55 days, and the minimum thermometer readings (February) were 1° C.

A. A.

Antonibon (Arrigo). **Azione del petrolio sulle larve di zanzara.** [The Action of Petroleum on Mosquito Larvae].—*Ann. d'Igiene.* 1923. Nov. Vol. 33. No. 11. pp. 796–801. With 1 fig. [4 refs.]

The author carried out an interesting series of experiments to test the following three points relative to the lethal effects of petroleum on mosquito larvae.

1. The mechanical action of the layer of oil preventing the larvae from obtaining access to the air. This he shows to be of little moment, since the water contains sufficient oxygen to preserve their life for several hours. Those of *Culex pipiens* lived for 8 hours in a stoppered bottle filled with water.

2. Obstruction of the respiratory syphon. By coloration with Sudan III or Scharlach Red it was shown that contact of the syphon with the oil led to immediate blocking of the respiratory apparatus, the oil entering by capillary attraction and the larva dying from suffocation within 30–60 minutes.

3. The toxic effects of the petroleum. This was not easy to determine, because the toxic and suffocative actions could not be separated, but immersion in the oil killed the larvae in 5 minutes.

H. Harold Scott.

Green (Howard Whipple). **The Effect of Oil upon *Anopheles* Mosquito Larvae.**—*Amer. Jl. Hyg.* Baltimore. 1924. Jan. Vol. 4. No. 1. pp. 12–22.

Experiments with many kinds of oil are here tabulated, but they do not disclose anything new. They show that although larvae can be suffocated by oil, whether by mere interposition of a film of oil or by entry of oil through the spiracles, the rapidity of death depends upon the toxicity and volatility of the oil.

A. A.

Hurwood (Alan S.). **Some Observations on the Use of Oil as a Larvicide.**—*Health.* Melbourne. 1923. Nov. Vol. 1. No. 9. pp. 255–259. With 2 charts in text.

In the hot dry climate of Australia a mixture of 70 parts of kerosene and 30 parts of residual (fuel) oil makes the best spray; about 1 oz. to the square yard should be sufficient.

A. A.

Buxton (P. A.). **Applied Entomology of Palestine, being a Report to the Palestine Government.**—*Bull. Entom. Res.* 1924. Mar. Vol. 14. Pt. 3. pp. 289–340. With 5 plates, 9 text figs. & 1 map. [47 refs.]

This is a replete and mature paper with an introduction to the topography and climate and faunal features of Palestine, a map, and a full list of references. Of 36 pages devoted to medical entomology more than half are occupied by the anopheline mosquitoes, the remainder being filled with usefully annotated lists of other land-arthropods found in the country.

The local species of Anopheles number nine, of which two—*A. pharoensis* and *mauritianus*—are rare. Of the others, *A. bifurcatus* is an urban or "domestic" species, breeding most commonly, but not exclusively, in wells and in subterranean cisterns, and is by far the most dangerous of all as a malaria-carrier; while the remaining six—*A. algeriensis*, *A.* "*hyrcanus*" [=*sinensis*], *A. elutus* [which the author separates from *A. maculipennis*], *A. sergenti* [which he regards as distinct from *culicifacies*], *A. superpictus* [popularly called "palestinensis"], and *A. multicolor*—are rural. Of these rustic species the first two—*algeriensis* and "*hyrcanus*"—have never been seen in house or tent by the author, and are therefore considered by him to be of little importance; all the other four species go into houses and may rest there after feeding on man. The breeding-places of these species are described, and the observed associations of the species therein. In discussing the subject of artificial control the destruction of *A. bifurcatus* is written down a "gigantic" business and the greatest sanitary problem of Palestine. For destroying weeds and grass in irrigation channels, where some of the other species breed, flame-throwers were tried, but did not give satisfaction. In the laboratory, experiments were made with trioxymethylene as a larvicide, but were only moderately successful: using it in the proportion of 3 gm. to the square metre, two-thirds of the exposed larvae died, but one-third survived and eventually pupated. The discussion of natural control is mostly of only local interest, but the author remarks on the usefulness of fishes of the genus *Cyprinodon* in the field and of the possible

utility of the common eel, and also on the disputable efficacy of, at any rate, the local species of Chara. He and others have found 4 species of Anopheles larvae flourishing in pools containing great masses of Chara, but, on the other hand, observed two pools that remained quite free from mosquito larvae until Chara was cut and then became occupied by larvae of Theobaldia.

There are some interesting remarks on the influence of periodic religious pilgrimages and of the nomadic Bedouin life on the problems of malaria. In the author's experience the quartan parasite is rare in Palestine, having been found only in just over 1 per cent. of his films.

Stegomyia fasciata occurs in the towns of the coast and of the Jordan rift; in Jerusalem also, but there only in summer. Two cases of myiasis by *Wohlfahrtia magnifica* are mentioned. In the author's experience the maggots of *Chrysomyia albiceps* are not so exclusively predaceous on Lucilia and Calliphora maggots as they have been said to be.

Xenopsylla cheopis was found to be the common rat flea, but *Ceratophyllus fasciatus* was observed once in Jerusalem. *Pulex irritans* was identified. *Cimex lectularius* is found in many parts of Palestine, even in Tiberias where the mean temperature is high. *Pediculus humanus* is common.

A. A.

WHITTINGHAM (Harold E.) & ROOK (Alan F.). **Observations on the Life-History and Bionomics of** *Phlebotomus papatasii*. [Abstract.] —*Brit. Med. Jl.* 1923. Dec. 15. pp. 1144–1151. With 14 figs. [14 refs.]

The R.A.F. Sandfly Fever Commission having recently demonstrated that this fever can be given to man in England by the bite of sandflies (*Phlebotomus papatasii*) bred in sterile soil in England, and having thereby shown that the virus of the fever must either be actually inherent in the egg or become in some way adherent to the egg (or larva) from an original parental source, it became the business of the authors, as members of the said Commission, to follow all the natural operations of *P. papatasii* with an eye to rational and effective control and prophylaxis. In the result they have given us one of the completest and intensest accounts of the life-history of a specific insect that has ever been published. They appear to have lived with the insects and to have kept a devoted eye upon them from cradle to grave—from ovum, full cycle, to ovum again; and, perhaps, we can appreciate what this means when we learn that certain natural events in the life-history occur only between midnight and dawn and certain crises require the proper concurrence of temperature and moisture. To attempt to summarize such a document is an injustice; it must be read in original; and the original, though full of minute detail, is not in the least tedious. Nevertheless, we may extract certain facts that most plainly illustrate the utility to a sanitarian of a minutely particular entomological study.

The complete life-cycle of *Phlebotomus papatasii* (as studied in Malta, where all field observations were checked by experiment) occupies, *in summer*, when temperature and humidity are throughout propitious, about 8 weeks. The optimum atmospheric temperature for all stages of the cycle is between 80° and 90° F. When the mean daily temperature falls below 65° F. the adults very soon die: the

insect therefore subsists during winter not as an adult but, as is here demonstrated, as a larva.

The egg-stage lasts 9 or 10 days. There are four stages in the growth of the larva ; the first three last each about 6 days ; the fourth lasts in summer about 9 days, but when the earth-temperature falls below 65° F. a check occurs, which may continue for at least 202 days, and it is in this stage that the insect hibernates. The pupa stage lasts about 10 days. The adult stage lasts about 14 days in a moist atmosphere, but in a comparatively dry atmosphere (40 to 50 per cent. humidity) adults may live as long as 30 days.

To give a few more particulars of interest to the medical officer :—

The act of generation usually does not occur until the 2nd day of life and until the female has had a feed of blood ; a single act is sufficient. The term of ovarian pregnancy is 7 to 10 days ; the one feed of blood is essential to pregnancy, further feeds—though they may be taken—are not essential. Parturition extends over 2 or 3 days and the female dies a day or two afterwards. The full tale of eggs is about 40, but rarely are all delivered—on an average (observation of thousands of flies) about 5, and of those laid less than half "reach maturity." Parturition does not take place unless atmospheric humidity is over 65 per cent. The favourite place for depositing eggs is at the foot of walls and buildings, where there is nitrogenous matter and moderate moisture. The egg, except when perfectly fresh laid, will stand drying for about an hour ; it will stand submersion for 24 hours, but embryonic development is then delayed.

The larva usually hatches between midnight and dawn. A humid atmosphere (optimum 80-90 per cent. humidity) is necessary for successful hatching. At its very earliest appearance drying is fatal, but older larvae, particularly those in the 4th stage, are more resistant to drought. Larvae cannot resist complete submersion long, but can tolerate partial submersion (as in rainy weather) for at least 3 days. The pupa cannot withstand complete submersion longer than an hour ; but it may be dried in the air for weeks without losing its vitality.

Adults usually emerge between midnight and dawn. They have the characteristic Psychodid hopping flight and do not go more than about four yards at a stretch ; during the whole of their brief life they probably do not travel fifty yards from the place where they were bred. Although the parturient female requires a certain degree of atmospheric humidity, adults dislike damp and instinctively avoid a skin wet with perspiration.

The paper is well illustrated with enlarged drawings of the egg in various aspects, including the act of hatching, the larva in all its four stages, the pupa, the egress of the imago, and the adult male and female.

It is only just to say, in conclusion, that quite apart from its purely entomological interest and its practical value to the sanitarian, this exact record of the life-history of a species as particularly affected by its meteorological environment has a high value for the biologist.

A. A.

NITZULESCU (Virgil). **Sur l'ingestion du bleu de méthylène par** *Stomoxys calcitrans.*—*C. R. Soc. Biol.* 1924. Jan. 25. Vol. 90. No. 2. pp. 155–156. [1 ref.]

A confirmation of the fact that Stomoxys sucks other liquids besides blood. Having noticed the numbers of these blood-sucking flies

dead near a dish of sweetened arsenical solution, the author made assurance doubly sure by using a sweetened solution of methylene blue which was plainly visible in the insects' crop. The author observed that 30 per cent. of the flies in chemists' shops at Jassy were Stomoxys.

A. A.

Jack (Rupert W.). **Tsetse Fly. Inspection of Shangani Experimental Area.**—*Rhodesia Agric. Jl.* 1923. Dec. Vol. 20. No. 6. pp. 653–662.

In continuation of observations already reported (see this *Bulletin*, *ante*, p. 149), the author in August 1923 made another inspection, of four weeks' duration, of the fly tract in the Shangani basin in which game has been harried since 1919. His impressions, which are supported by a certain amount of native testimony and by the opinion of some independent European observers, remain unshaken that " there has been very marked diminution, and, as far as can be ascertained, considerable retrogression of the fly " and leave no reasonable doubt that this has been brought about by harrying and destruction of the game. In some parts of the tract in question, where the fly (*Glossina morsitans*) was very abundant, it is now almost extinct, and these are just the parts where the shooting has been most effectively carried out. At the same time the fly has been spreading in other parts of the colony outside the tract in question.

A. A.

Journal of the Department of Agriculture. Pretoria. 1923. Nov. Vol. 7. No. 5. p. 389. With 1 fig.—**Dummy versus Zebra to attract Tsetse Flies.**

In the Journal above cited, for July 1923, Mr. R. H. Harris recorded some experiments showing that tsetse flies are attracted to dummy animals, even of rude make, as readily as to living animals, and he here records some further experiments, which confirm him in his

Dummy and zebra used to test comparative attractiveness for tsetse flies.

explanation that tsetse flies are led to their prey by sight rather than by smell. When a dummy animal was placed beside an ox the majority of flies always went to the ox ; but when a tame zebra took the place of the ox (the zebra's alternating dark and light stripes making it a relatively inconspicuous object) the majority of flies always went to the dummy.

A. A.

Nicholls (Albert G.). **Two Cases of Infestation of the Intestine with Larvae of Species of Fannia.**—*Canadian Med. Assoc. Jl.* 1924. Jan. Vol. 14. No. 1. pp. 42–43.

The larvae in question were *Fannia scalaris* and *F. canicularis*—both together in one of the cases. As the patient in one case is said to have passed them "about once a month," and in the other case "off and on for fifteen years," it is a reasonable conjecture that they got into the faeces after defaecation, not before.

A. A.

Colombe (J.) & Foulkes (D.). **Myiases du tube digestif.**—*Gaz. des Hôpit.* 1924. Jan. 1. & 3. Vol. 97. No. 1. p. 5.

Two cases of intestinal myiasis in adult women are rather fully reported. Symptoms common to both were anorexia, fits of acute abdominal pain, tenderness on pressure, and attacks of vomiting, at times sanguinolent; the recurrence of these symptoms continued for a long time, in one case for at least 16 months. In one case, where the maggots identified were *Piophila casei*, there also occurred violent headache and an attack of haematuria, and maggots were sometimes vomited: this case resisted all treatment and the patient refused to have the stomach washed out. In the other case, where the maggots were identified as a species of Anthomyia, there was persistent diarrhoea and maggots were passed and sometimes blood, and a 2·7 per cent. eosinophilia was observed: in this case maggots disappeared from the stools after treatment with santonine, but although the patient's other symptoms gradually improved thereafter, she seems not to have recovered health completely.

A. A.

Gilmer (Paul M.). **The Poison and Poison Apparatus of the White-marked Tussock Moth, *Hemerocampa leucostigma* Smith and Abbot.**—*Jl. Parasit.* 1923. Dec. Vol. 10. No. 2. pp. 80–86. With 4 text figs. & 2 plates. [8 refs.]

The irritation caused by certain smaller white hairs of the caterpillar of this species of tussock-moth is not a mechanical effect, but is due to a venom secreted by unicellular glands individually connected with each hair. These hairs, though occurring in small tufts all over the body, are particularly aggregated in certain tubercles and tussocks. The hairs retain their virulence when shed in cocoons and moulted skins. The venom is very resistant to certain chemical agents and to heat, and is extremely insoluble in all solvents tried; it is here stated that its properties are only temporarily lost by exposure to alkalis and by extreme heat (185° C. dry heat for an hour; 105° steam for 15 minutes); nothing short of complete destruction of the protoplasm of the unicellular gland destroys the urticating properties of the hair.

A. A.

Ewing (H. E.). **Our Only Common North American Chigger, its Distribution and Nomenclature.**—*Jl. Agric. Res.* Washington. 1923. Dec. 1. Vol. 26. No. 9. pp. 401–403. [5 refs.]

The animal referred to no less than fifteen times in this short paper by the name of "chigger" is not the notorious sand-flea (variously

known as *Sarcopsylla*, *Dermatophilus* and *Tunga penetrans*) but a Trombidiid mite—a Trombicula. [This ascription of the name "chigger" to a mite was long ago stigmatized as improper, and is particularly unfortunate in medical zoology.]

A. A.

CAWSTON (F. G.). **Some Practical Means of dealing with the Menace of Fresh-Water Snails in Natal.**—*S. African Med. Rec.* 1923. Nov. 24. Vol. 21. No. 22. pp. 514–515.

The menace of freshwater snails is, of course, implied in the fact that some of the species are known to be, and other might hereafter prove to be, intermediary hosts of trematode parasites hurtful to man. This menace is enhanced by embankments and by anything that, by obstructing natural drainage, tends to the formation of shallows, swamps and of unnecessary ponds attractive both to pond-snails and to bathers. The author regards the duck as a very present and profitable help against this menace, and thinks that assistance may be rendered by the school teacher, and also by the posting of instructive warnings at seductive ponds. This matter, he thinks, well deserves the attention of the Railway Administration and of the Departments of Public Health and Education.

A. A.

GILMER (Paul M.). **Derris as a Parasiticide.**—*Nineteenth Report State Entomologist of Minnesota.* 1922. Dec. 1. pp. 41–49. [3 refs.]

Derris (or Deguelia) may be used either as a dry powder or as a liquid extract. Trials here described show that, like pyrethrum, it is a useful insecticide. Its action is not so instantaneous as that of pyrethrum, but its virtue in the open air is more persistent. As it is to some extent toxic to vertebrates as well as to insects, having in some of these trials killed rats as well as their ectoparasites and made a cat as well as its fleas uncomfortable, it is well to mix it with a milder insecticide, and a powder consisting of 20 per cent. derris and 80 per cent. tobacco is here recommended for ordinary use.

A. A.

RAM (Beli). **Two Fatal Cases of Snake Bite.**—*Indian Med. Gaz.* 1923. Dec. Vol. 58. No. 12. pp. 585–586.

Although identification was not possible, the snake in these two cases, of which two brothers were the victims, is believed, from the symptoms, to have been a krait. The assault occurred in the early hours of the morning while the brothers, aged 25 and 12 years, were sleeping together on the ground. The elder brother was bitten on the shoulder and did not go for treatment until about three hours afterwards when the presence of a snake was suddenly discovered. The account is not quite clear, but one gathers that the man was asleep when he was bitten, that he was awakened by some tingling which he ascribed to an insect-bite, and that he went to sleep again. He was able to walk to hospital (there being then no paralysis of the limbs), where he complained of inability to swallow, obscurity of vision, and pain in chest and hypogastrium; slight ptosis and slight incoherence were noticed, and on the shoulder a small purple spot with no oozing and no swelling.

Fresh cobra antivenene (40 cc.) was then injected intravenously, and as further signs of paralysis appeared another similar dose was injected an hour afterwards. The paralysis progressed, however, and two hours afterwards the patient lay quite paralysed and helpless, but still conscious and able to whisper and make some signs. Two hours later he could still attempt to put out his tongue, but his eyelids were closed, and he could no longer make signs with his hand. As the pulse was good and as no difficulty of breathing was observed, but only occasional twitchings of the body, the patient was left for a while, and half an hour afterwards—that is about 8½ hours after he was bitten—he was dead.

The younger patient made no complaint of any kind until his brother was getting his first injection, nor, although it was reported that he had complained of tingling behind the ear, was any mark found upon him. His symptoms when they appeared were attributed to fright; except that he retained the power of speech until near the end, and regained the power of swallowing which at the beginning was impaired, they were like those exhibited by his brother; and he died about 6½ hours after their first onset.

A. A.

METCALFE (A. J.). **Two Deaths from eating "Toad Fish."**—*Med. Jl. Australia.* 1923. Dec. 1. 10th Year. Vol. 2. No. 22. pp. 571–572.

Two Malays, although duly warned of the risk, ate the flesh of a species of globe-fish (Tetrodon) at their midday meal. No ill effects followed immediately, and at half-past five in the evening they ate the partly cooked liver of the fish. One man died half-an-hour afterwards; the other man, who then received an emetic, died three hours later. The symptoms, which were manifested in a few minutes and developed very quickly, were motor and sensory paralysis, beginning in the hands and spreading upwards to the throat, and then involving the legs and spreading upwards in the same way. [The Tetrodon of this tragedy, here called a "toad fish," is everywhere known as a globe-fish, and sometimes as a parrot-fish. The toad fishes belong to another family (Batrachidae) of another order of fishes (Plectognathi) and have a poisonous reputation of their own].

i. THEODOR (Oscar). **Pupae of Some Palestinian Culicines.**—*Bull. Entom. Res.* 1924. Mar. Vol. 14. Pt. 3. pp. 341–345. With 3 text figs.

ii. CHARRIER (H.). **Le *Stegomyia fasciata* dans la région de Tanger (Maroc).**—*Bull. Soc. Path. Exot.* 1924. Feb. 13. Vol. 17. No. 2. pp. 137–142. [9 refs.]

iii. NEWSTEAD (R.). **On a New Species of *Phlebotomus* from Japan.**—*Ann. Trop. Med. & Parasit.* 1923. Dec. 21. Vol. 17. No. 4. pp. 531–532. With 1 text fig.

iv. FOLEY (H.) & PICOUT-LAFOREST (A.). **Quelques observations sur la répartition et la biologie d'*Holoconops mediterraneus* (Ceratopogoninés) dans les régions sahariennes.**—*Arch. Inst. Pasteur d'Algérie.* 1923. Dec. Vol. 1. No. 4. pp. 684–687. [3 refs.]

v. EDWARDS (F. W.). **On some Algerian Species of Simulium.**—*Arch. Inst. Pasteur d'Algérie.* 1923. Dec. Vol. 1. No. 4. pp. 647–653. With 2 text figs.

vi. Blacklock (D.). **A Note on** *Auchmeromyia luteola*, **Fab.** [Miscellanea.]—*Ann. Trop. Med. & Parasit.* 1923. Dec. 21. Vol. 17. No. 4. p. 555. With 1 fig.

vii. Pavlovsky (E. N.). & Stein (A. K.). **Die Gastrophilus-Larve als Gastparasit in der Menshenhaut.**—*Parasitology.* 1924. Jan. Vol. 16. No. 1. pp. 32–43. With 5 text figs. [1 ref.]

viii. Leon (N.). **Sur l'appareil buccal de la punaise des lits** (*Cimex lectularius*).—*Ann. Parasit. Humaine et Comparée.* Paris. 1924. Jan. Vol. 2. No. 1. pp. 71–73. With 2 figs. [4 refs.]

ix. Cappe de Baillon (P.). **Mycose des centres nerveux chez le grillon domestique** (*Gryllus domesticus* **L.**).—*Ann. Parasit. Humaine et Comparée.* Paris. 1924. Jan. Vol. 2. No. 1. pp. 26–33. With 2 figs. [8 refs.]

x. Westphalen (H.). **Milben in den Fäzes des Menschen.**—*Deut. Med. Woch.* 1924. Feb. 8. Vol. 50. No. 6. pp. 175–176. [4 refs.]

xi. Walsh (David). **Insect Bites and Stings.**—*Jl. Trop. Med. & Hyg.* 1924. Feb. 1. Vol. 27. No 3. pp. 25–26.

i. Contains figures of paddles and breathing-trumpets and a key for identification of species.

ii. This paper draws attention to some particular gaps in the chart showing the geographical distribution of *Stegomyia fasciata* published in Brumpt's Précis.

iii. *P. squamirostris* described and figured.

iv. Records finding microfilariae in two of fifty of this species caught on 10 asses of which 3 had the same kind of microfilaria in their blood.

v. *S. ornatum*, *S. bezzii*, *S. aureum*, *S. beckeri*, *S. equinum*, and *S. sergenti* n. sp., of which the male is "similar in most respects to" and the female is "apparently indistinguishable from" *S. equinum*.

vi. A photograph shows the attitude, almost at right angles to the skin, assumed by the larva when sucking blood.

vii. There is not much that is novel in this paper except a good figure of a vertical section of the skin showing that the track of the Gastrophilus larva is in the skin, just below the stratum lucidum, and not, like that of Hypoderma, beneath the skin.

viii. Confirms the fact, which some authors have questioned, that the apposed mandibles of the bug form a double canal.

ix. An account of a fungus invading and disorganizing the cerebral ganglia of the common cricket by way of the gullet. The fungus is not identified, but its mycelium and spores are figured.

x. Mites are occasionally found in human faeces, particularly in diarrhoeic conditions. They are ingested with food. In the author's experience they have usually been traced to flour, and have been determined as *Tyroglyphus farinae*, and have had no pathological significance.

xi. Emphasizes the possibility of infection from insect bites and refers to well-known principles of treatment.

A. A.

Pawlowsky (E.) & Stein (A. K.). **Sur les causes de l'action des insectes du genre** *Pediculus* **sur le derme de l'homme.**—*Bull. Soc. Path. Exot.* 1924. Feb. 13. Vol. 17. No. 2. pp. 143–144. With 1 fig. [2 refs.]

The toxic properties of the saliva of Pediculus, as of Phthirius, come from the reniform salivary glands. The secretion leaves in the case of Pediculus an itching papule; in the case of Phthirius painless blue spots.

A. A.

PLAGUE.

Taylor (J.) & Chitre (G. D.). **Comparative Experiments on the Transmission of Plague by *X. cheopis* and *X. astia* with a Discussion of Certain Epidemiological Evidence as to the Relation of these Fleas to Epidemic Plague.**—*Indian Jl. Med. Res.* 1923. Oct. Vol. 11. No. 2. pp. 621–638. [5 refs.]

A series of plague transmission experiments were carried out with Madras rats in Bombay during the cold weather. Out of eleven experiments in which *X. astia* was used a successful transmission occurred in three, while under exactly the same conditions four out of eleven with *X. cheopis* were successful.

Similar experiments with guineapigs showed six successes out of eight with *cheopis*, and only one out of eight with *astia*. The failure of *astia* to transmit plague in Colombo along with these results in Bombay are considered in relation to certain facts as to the distribution of *astia* and the occurrence of plague in Central and Northern India, and would suggest that where this flea is found under suitable climatic conditions it may be an effective carrier.

The view is put forward that the presence of *astia* as the sole flea on rats in certain areas of the Madras Presidency is not so much an indication of special suitability of the climate for *astia* as an indication of unsuitability for other fleas. The low total prevalence of *astia* suggests that the climatic conditions are not specially favourable even for this flea. A short series of biting tests with *astia* on the human host were made. 72 per cent. of successful bites were obtained within 2 minutes on a single application of each flea used at a temperature between 76°F. and 84°F. A method of identifying the species in the living state is given in an Appendix.

J. H. Tull Walsh.

Otten (L.). [In Dutch. Title only in English.] **The Way in which Plague spreads over Java (Over de wijze van verspreiding der pest op Java).**—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 6. pp. 970–990. With 3 folding maps. [1 ref.]

Otten gives his view on the spread of plague from village to village, which is opposed to that of Van Steenis (see this *Bulletin*, Vol. 20, p. 741). Active transmission by the non-migrating house rat is not possible. Of the two remaining possibilities (transmission by the field rat, after it has been infected by contact with the house rat, and by minor transport of infected house rats or fleas) Van Steenis attaches most value to the first, and especially to the flea *Pygiopsylla ahalae*, common on the field rat, at least in cooler climates. Otten offers argument, which cannot be followed in detail, to show that the contact existing between the two species of rats is not in agreement with this statement; he denies that Van Steenis has established the part played by the field rat in plague spread. He holds that "infection is carried everywhere by human agency by means of the smallest load and along the narrowest line of communication." [v. Hoesen, this *Bulletin*, Vol. 20, p. 361.]

W. J. Bais.

Heggs (T. Barrett). **Some Observations on Plague in Baghdad, with a Plea for the Routine Use of the Specific Antitoxic Serum in Treatment.**—*Jl. Trop. Med. & Hyg.* 1923. Nov. 1. Vol. 26. No. 21. pp. 325–328.

The author records some very sound and useful deductions founded upon outbreaks of plague during 1922 and 1923 :—

" (1) Bubonic plague is endemic in Baghdad. In the inter-epidemic periods plague infected rats are continuously found, though in small numbers.

" (2) Climatic conditions determine the onset and cessation of the disease in epidemic form. A mean weekly maximum temperature above 100°F. and a weekly minimum temperature below 40°F. in Baghdad are inimical to plague.

" (3) The protection of the population by anti-plague vaccine is definite and almost complete.

" (4) There is evidence to show that some protection may last longer even than one year.

" (5) The best method of treatment is by anti-plague serum (Pasteur), the results of which completely justify full confidence. . . . . Large doses by the intravenous route in the toxic cases are required . . . . . as soon as possible. Doses of less than 40 cc. are useless. 100 cc. [to 250 cc.] . . . . . is required in very toxic cases. An initial large dose gives better results than a moderate dose repeated. The myocarditis of plague toxaemia is severe and dangerous and must always be considered."

J. H. T. W.

Bernard (P. Noël) & Pons (R.). **Recherches sur les formes anormales de la peste au Cambodge et en Cochinchine.**—*Bull. Soc. Path. Exot.* 1924. Jan. 9. Vol. 17. No. 1. pp. 39–61. (Discussion pp. 61–67.)

May we say at once that variation is a law of life and that abnormal forms of most pathogenic bacteria are accepted. The authors tell us that every year in Cochinchina a few sporadic cases of plague occur, which are sometimes the starting points of small local epidemics quickly suppressed by classical methods.

In Cambodia plague is endemic at Phnom-Penh, causing every month a few deaths and nearly every year provoking an epidemic. It was among these plague cases that the authors, accompanying the Health Officers, carried out their micro-biological investigations. 105 specimens of liver were taken by aseptic puncture. The bacilli isolated were inoculated into rats or guineapigs and were also tested as to their reaction when grown with various sugars. Fifteen "observations" are given in lengthy detail. All the strains fermented glucose and maltose, generally without gas, sometimes with gas. Fermentation of mannite occurred rarely and of lactose and saccharose only once (Obs. 154) in the 12 hour period and once or twice after 24 hours. In these cases inoculation was negative for plague; Obs. 154 :—Diagnosis : paracoli bacillus or Friedländer ! Obs. 202. Diagnosis :—This germ has the cultural and biochemical reactions of paratyphoid B, but did not agglutinate with Anti-para B serum.

Contrary to the opinion of Mathis* [see this *Bulletin*, Vol. 20, p. 362]

* Of 398 cases of plague recorded in 1921, 168 were in children under ten and 12 in infants of 5 to 25 days. Diagnosis was made post mortem from the examination of pieces of liver or spleen. Convulsions or intestinal haemorrhage were the alleged causes of death. Buboes were rare.

the authors state that :—Neither at Saigon and Cholon, nor during our month's work at Phnom-Penh at the endemic period, were we able to confirm the existence of unrecognised septicaemic plague in infants holding any special place in infant mortality.

J. H. T. W.

PUBLIC HEALTH REPORTS. 1924. Feb. 1. Vol. 39. No. 5. p. 204.
—Record of Plague Infection in California.

The following table, taken from a report recently received from Senior Surgeon J. C. PERRY, Director, Public Health, District No. 7, is of historical interest :—

Record of Plague Infection.

Place.	Date of last case of human plague.	Date of last case of rat plague.	Date of last case of squirrel plague.	Total number rodents found infected since May, 1907.
City :				
San Francisco ..	Aug. 18, 1923.	Oct. 23, 1908.	May 21, 1917.	398 rats, 1 squirrel.
Oakland	Sept. 10, 1919.	Dec. 1, 1908.	Sept. 4, 1919.	126 rats, 3 squirrels.
Berkeley	Aug. 28, 1907	None.	None.	None.
Los Angeles.. ..	Aug. 11, 1908.	None.	Aug. 21, 1908.	1 squirrel.
Santa Cruz	None.	None.	May 5, 1920.	2 squirrels.
County :				
Alameda (exclusive of Oakland and Berkeley.)	June 29, 1922.	Oct. 17, 1909. woodrat.	July 8, 1922.	466 squirrels, 1 woodrat, 3 plague-like squirrels.
Contra Costa ..	July 13, 1915.	None.	June 6, 1923.	1,752 squirrels.
Fresno	None.	None.	Oct. 27, 1911.	1 squirrel.
Merced	None.	None.	May 15, 1920.	8 squirrels.
Monterey	None.	None.	June 16, 1920.	41 squirrels. 1 plague-like squirrel.
San Benito	June 8, 1921.	None.	May 26, 1921.	102 squirrels. 1 plague-like squirrel.
Santa Clara ..	Aug. 31, 1910.	None.	June 29, 1920.	44 squirrels.
San Joaquin ..	Sept. 18, 1911.	None.	May 17, 1920.	22 squirrels.
San Luis Obispo ..	None.	None.	Jan. 29, 1910.	1 squirrel.
Santa Cruz ..	July 18, 1922.	None.	Sept. 27, 1922.	40 squirrels.
Stanislaus	None.	None.	June 18, 1920.	15 squirrels.
San Mateo ..	None.	None.	June 23, 1920.	22 squirrels.

It shows that the last case of human plague in California occurred on August 18th 1923, and the last recorded case of squirrel plague

on June 6th 1923. Inspection and poisoning of ground squirrels (*Citellus beecheyi*) are being carried out in several counties of the San Francisco Bay District.

J. H. T. W.

TANON (L.). **Le laboratoire de prophylaxie de la peste à la Préfecture de Police.**—*Ann. d' Hygiène Publique, Industrielle et Sociale.* 1923. Oct. New Series. No. 10. pp. 606–617. With 6 figs.

This police laboratory watches over Paris and carries out excellent work in plague prevention. The methods for catching rats in buildings, wharves, etc., are fully described. Directions for the use of phosphorus paste, as the most useful poison for rats, are printed and distributed with supplies of the paste.

J. H. T. W.

WASILEWSKI (A.). **Dane doświadczalne w kwestji zapobiegania i leczenia dzumy. Les données expérimentales sur la prévention et le thérapie de la peste.**—*Medycyna Doświadczalna i Społczna.* Warsaw. 1923. Vol. 1. No. 5–6–7. pp. 392–399. French summary p. 399.

As the result of experiments on laboratory animals the author records the following summary :—

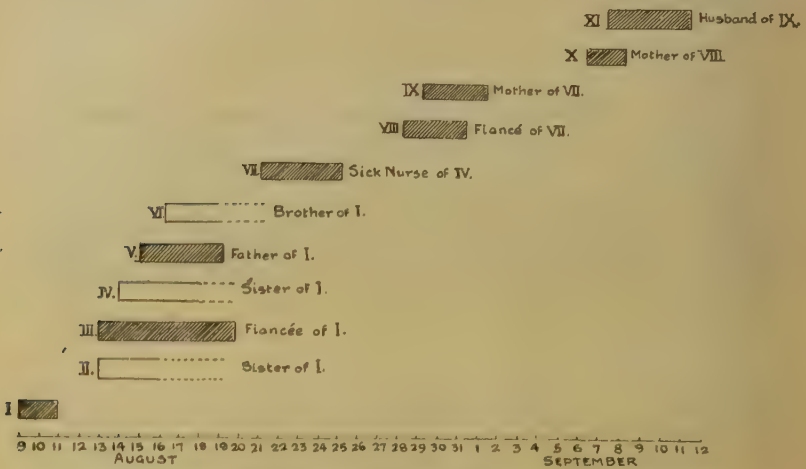
Anti-plague serum and anti-plague vaccine prepared with killed bacilli are not able to save guineapigs from death ; they only prolong the course of the malady. The problem of active and passive immunity for man is not solved. In the struggle against plague sanitary hygienic measures are, if not of unique, at least of the highest importance. [cf. this *Bulletin*, Vol. 19, p. 544 (Plague : a Review) ; Vol. 20, p. 357 (VASSALLO), p. 362 (JOLTRAIN & DE GENNES)].

J. H. T. W.

JORGE (Ricardo). **Sur la peste pneumonique (à propos de l'épidémie d'Alcochète).**—*Bull. Office Internat. d' Hyg. Publique.* 1923. Nov. Vol. 15. No. 11. pp. 1431–1439. With 1 chart. [1 ref.]

The author, Portuguese delegate to the Committee of the Office of International Hygiene, calls this report "a modest essay." Would that all reports were as modest and as well written. The initial case came from Lisbon ; a young dock labourer, aged 24. In the part in which he lived a few rare cases of bubonic plague had occurred, one in particular, a few days previous to his illness. When the man fell ill he returned to his home at Alcochete, on the banks of the Tagus, some fifteen miles from Lisbon. He arrived on August 9th and died two days later. From this source arose 8 cases of pneumonic plague and 2 suspects. From a clinical point of view the morbid picture was more or less uniform :—Rigors, a temperature rising to 40° C. or above ; bilateral pain in chest generally below the mammary line ; cough with rose-red sputum and occasionally haemoptysis ; pneumonic centres extending rapidly with myocarditis and death ; restlessness and

agony but no delirium. The course of this small epidemic is fully explained by the diagram given below.


XI Husband of IX.
X Mother of VIII.
IX Mother of VII.
VIII Fiancé of VII.
VII Sick Nurse of IV.
VI Brother of I.
V Father of I.
IV Sister of I.
III Fiancée of I.
II Sister of I.
I
9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12
AUGUST
SEPTEMBER

Pneumonic Plague at Alcochete. (The unshaded cases recovered.)
[From *Bulletin de l'Office International d'Hygiène Publique.*]

The author then proceeds to discuss pneumonic plague and the features of other epidemics.

J. H. T. W.

D'AUNOY (Rigney). **Studies on *Bacillus Pestis*. I. Optimum and Limiting Hydrogen-Ion Concentration for the Growth of *Bacillus pestis*.** — *Jl. Infect. Dis.* 1923. Nov. Vol. 33. No. 5. pp. 391–415. With 1 chart. [43 refs.]

The application of the conception of hydrogen-ion concentration to bacteriological technique has rendered possible a more exact knowledge of the metabolic activities of micro-organisms. The first two of these studies deal with the range of growth of *B. pestis* at varying hydrogen-ion concentrations and the final PH in cultures of that organism, containing a fermentable carbohydrate. It was found that in the case of stock cultures growth occurred between fairly wide limits—PH 5·0 and PH 8·0—with optimum growth between PH 6·2 and and PH 7·0. Recently isolated strains proved more exacting and showed a decided optimum point between PH 6·0 and PH 6·6. The final PH in cultures of *B. pestis* containing 1 per cent. dextrose is PH 4·8, and this is uninfluenced by prolonged cultivation. The author's findings with regard to the action of this organism on carbohydrates correspond closely with previous work. Fifty strains were examined. All produced acid (no gas) with dextrose, galactose, levulose and mannite, the majority fermented arabinose and maltose, whilst a few only attacked glycerol and salicin. He concludes that carbohydrate fermentation is of no value as a basis for the classification of *B. pestis*. In the production of agglutinating sera (rabbit) the author found the use of dead cultures of little value. However, by

intravenous inoculation of living organisms, at first attenuated by growth in alcohol broth, he obtained sera the titre of which varied from 1 in 6,000 to 1 in 15,000. These sera were tested with their homologous strains only, so that their value in identification or classification cannot be appraised. Finally, the phenomenon of bacterolysis was studied. This was shown to be due to the usual two factors, one destroyed by a temperature of 56° C. and the other at 68° C. and above. The presence of lytic bodies in the sera of human plague cases (both active and convalescent) proved inconstant and in the active cases bore no relation to the final issue. Protective anti-plague sera of various types were also examined, and found to possess little or no lytic action, and the results with various normal mammalian sera were entirely negative. The author is of the opinion, as the result of work not yet completed, that specific iso-electric points exist for the lysis of various organisms and suggests that the diversity of findings in his bacteriolytic experiments might be due to some such cause.

S. Phillips Bedson.

Kister. **Endo-Nährböden bei der Pestdiagnose.** [Endo Medium in the Diagnosis of Plague.]—*Cent. f. Bakt.* I. Abt. Orig. 1924. Feb. 15. Vol. 91. No. 5. pp. 280–282.

In August, 1920, the sailing ship "Prince George," laden with wheat, arrived in Hamburg from Buenos Aires. 348 rats were caught and two of them were found infected with plague bacilli. In 1922, two steamers, also from Buenos Aires, were found to contain plague-infected rats. In the case of the "Arola Mendi" 50 rats out of 478 contained *B. pestis*. Diagnosis was rendered extremely difficult owing to the fact that these infected rats also contained *Proteus vulgaris* which on ordinary media covered the surface and smothered the *B. pestis* colonies. From such cultures it was difficult, in stained preparations, to find and count typical plague bacilli with bi-polar staining. This trouble was overcome by the use of Endo's medium. On this the growth of *P. vulgaris* is restricted, it grows in circumscribed colonies and does not obscure the *B. pestis* colonies. Thus by plating out and subculture pure cultures of *B. pestis* can be obtained. The author states that it is not sufficient to use the Endo medium according to its original composition; but that the medium must be tested until the most favourable amount of fuchsin and sodium sulphite has been gauged.

J. H. T. W.

Cachin. **La peste dans la province de Tananarive en 1922 et 1923.**— *Ann. de Méd. et de Pharm. Colon.* Paris. 1923. May-June-July-Aug. Vol. 21. [22 *sic.*] No. 2. pp. 186–204.

This long and statistical report of plague epidemics produces nothing new. For reports of previous outbreaks in Madagascar *v.* this *Bulletin* Vol. 19. p. 370–1 (De Goyon, Allain).

J. H. T. W.

da Costa (Nery). **Considerações em torno da prophylaxia da peste.**— *Rev. Med.-Cirurg. do Brazil.* 1923. Nov. Vol. 31. No. 11. pp. 523–534.

The question of prophylaxis against plague is discussed, especially as regards isolation, disinfection, and deratization.

H. Harold Scott.

Boidin (L.) & de Gennes. **Adénite inguinale d'origine appendiculaire ayant simulé un Bubon pesteux.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1923. Nov. 29. Year 39. 3rd Ser. Vol. 47. No. 34. pp. 1599–1602. With 1 fig.

The bubo together with symptoms of general infection explain why one thought of the possibility of plague. Examinations in the laboratory rejected this diagnosis; no plague bacilli in the serous fluid of the bubo; inoculations into sensitive animals negative.

The full account of this long appendix with its hernial and gangrenous connexion with the inguinal gland can be read by surgeons to their great advantage. It is not for us.

J. H. T. W.

CHOLERA.

SANARELLI (G.). **De la pathogénie du choléra (neuvième mémoire). Le choléra expérimental.**—*Ann. Inst. Pasteur.* 1924. Jan. Vol. 38. No. 1. pp. 11–72. With 2 coloured plates. [24 refs.]

The coloured plates show vibrios in the intestinal walls and in the kidneys of rabbits that died of "experimental cholera" and the memoir itself is based upon, or repeats, experimental work described in previous "Mémoires." [See this *Bulletin*, Vol. 21, p. 72.] The author states that: It appears from my previous memoirs on cholera that the vibrios whatever their port of entry into the animal organism arrive ultimately, through the general circulation, in the digestive tube, their focus of election. My work removes the foundation of the ancient opinion which made the stomach the port of entry for the contagion of cholera.

[It has of course been shown long ago by other workers that the living vibrio infection may enter by other routes than the stomach alone; but we think it would be rash to exclude the stomach as a "port of entry."]

Prof. Sanarelli quotes from FERRAN'S book (1893) describing the first anti-cholera vaccinations in Spain (1885) with living vibrios and deaths from undoubted cholera due to the vaccination.

J. H. Tull Walsh.

GOLOVANOFF (M.). **De l'action de la bile prise par la bouche sur la réceptivité vis-à-vis des vibrions choleriques injectés dans les veines.**—*C. R. Soc. Biol.* 1923. Dec. 22. Vol. 89. No. 37. pp. 1263–1264.

The question to be answered is: Can the rabbit be sensitized to the toxin of *V. cholerae* by doses of ox-bile? A culture of vibrios ("Pol" strain) was used which killed rabbits of 1,800 to 1,900 gm., when $\frac{1}{4}$–$\frac{1}{3}$ of a 24-hour growth was injected into the veins. The lethal dose being settled, other rabbits of the same weight were sensitized with bile (10 cc.) mixed with liquorice powder, by means of a tube. The following day they received another 10 cc. of bile [? These operations would cause shock and disturb gastric secretion]. Four hours later $\frac{1}{8}$ of the lethal dose for such rabbits was injected into the vein of the ear. Control rabbits bore this dose (0·1 cc.) without inconvenience. The rabbits rendered sensitive by bile succumbed, generally in from 24 to 48 hours, with lesionsw hich characterize cholera.

[Cf. effects of bile in vaccination by the mouth, this *Bulletin*, Vol. 21, pp. 73–74. (GLOTOFF, GAMALEIA.).]

J. H. T. W.

BESREDKA (A.) & GOLOVANOFF (M.). **De la vaccination anticholérique. Étude sur l'immunité locale.**—*C. R. Soc. Biol.* 1923. Nov. 10. Vol. 89. No. 31. pp. 933–935. [12 refs.]

Cholera vibrios, killed at 60°C. (for 1 hour), injected under the skin or into the veins, give rise, as we know, at the end of 6–8 days, to several antibodies: bacteriolysins, agglutinins, sensitizers, etc. Their appearance is always accompanied by active immunity; and we do not hesitate in recognizing cause and effect.

We now recognize that there are cases in which immunity exists without the presence [?] of antibodies in the blood :—Anthrax, staphylococcus, streptococcus and dysenteric infections . . . . We call this local immunity and suppose that it is due to direct action of the microbe upon the receptive cells either in the skin or in the intestinal walls. As for staphylococcus and streptococcus we have succeeded in vaccinating the cells not only with the microbes but with soluble substances derived from them. (*C.R. Soc. Biol.*, Vol. 80., p. 7. & p. 506.)

Vibrio cultures, 8–10 days in the incubator, were filtered ; the filtrate was then re-sown with the same vibrios and kept at 37° C. for 8 days and again filtered. This second filtrate was used for the experiments. 1 to 2 cc. of this liquid were injected into guineapigs (about 400 gm. weight) into the skin, under the skin, into the peritoneal cavity or into the blood. Twenty-four hours after such preparation of the various subjects a lethal dose of living cholera vibrios was injected into the jugular vein.

Each series of experiments comprised 4 to 6 prepared guineapigs with 2 controls. All the controls died in from 12 to 18 or 24 hours. Among the " protected " animals there was a mortality of 1 in 5 ; but the majority resisted and showed no untoward symptoms.

Even if the vibrio filtrate is heated it retains its power, indeed it seems to gain in activity if heated to 100° C. or even 120° C. for one minute. Ingestion by the mouth has no effect. We thus obtain an atoxic soluble vaccine conferring immunity in the space of six hours and acting in all probability on the receptive cells of the intestine. The same effect is not obtained with emulsion of vibrio cultures in agar. Animals prepared with such an emulsion die like the controls when the lethal dose is given after 24 hours.

J. H. T. W.

Ciuca (M.) & Balteanu (I.). **Vaccination anticholérique par voie cutanée chez le Cobaye.**—*C. R. Soc. Biol.* 1924. Feb. 8. Vol. 90. No. 4. pp. 315–317. [3 refs.]

Guineapigs vaccinated subcutaneously or by way of the peritoneal cavity resisted infection and remained healthy. In the blood of the guineapigs cutaneously vaccinated there was no trace of anti-bodies, agglutinins or bacteriolysins ; whereas the serum of guineapigs vaccinated by way of the peritoneum agglutinated vibrios up to 1 in 360 [see this *Bulletin*, Vol. 21, p. 73 (Glotoff and other references) ; p. 74 (Gamaleia).]

J. H. T. W.

Vaglianos (M. S.). **Du sérum anticholérique purifié.**—*Ann. Inst. Pasteur.* 1923. Nov. Vol. 37. No. 11. pp. 943–945.

The original serum was obtained from immunized rabbits and its agglutinating power was 1 : 3,200. After drying in a vacuum over sulphuric acid it was redissolved in the proportion of 1·0 gm. dry matter to 2·0 cc. physiological salt solution. The syrupy liquid was placed in a water bath at 58° C. for three quarters of an hour and again dried in a vacuum. The golden needles which remained were by prolonged trituration reduced to a fine powder much less soluble in water than the dried original serum. 1·0 gm. of the powder added to 9·0 cc. saline solution showed, after twenty-four hours, two layers : a lower insoluble layer and an upper almost colourless layer of purified

serum. The latter separated in the centrifuge from the solid matter is deprived (50 to 65 per cent.) of proteins as compared with the original serum. Experiments on guineapigs lead to the following conclusions :—

1. The agglutinating power of purified anti-cholera serum is practically equal to that of ordinary serum.
2. The prophylactic power does not differ from that of the original serum.
3. The protein content is notably less than that of the original serum.

J. H. T. W.

SUHATZEANOU (C. St.) & THÉODORASCO (C.). **Variabilité des réactions bio-chimiques des vibrions à l'égard des sucres.**—*C. R. Soc. Biol.* 1924. Feb. 8. Vol. 90. No. 4. pp. 318–320.

During a small epidemic of cholera in Roumania the authors isolated 13 strains of *V. cholerae ;* 2 of these came from two wells in an infected village. Nine other varieties, including type vibrios from the Paris Pasteur Institute, were also examined. The sugars used were : Glucose, lactose, laevulose, dextrose, maltose, saccharose, galactose, inulin ; also the alcohols, glycerine and mannite. The results were recorded after culture in the incubator for 20 hours on litmus agar to which the various sugars were added.

The two vibrios from the village wells did not attack any sugar or alcohol and seemed to resemble *V. iners* of BESSON, RANQUE and SENEZ. The other strains all attacked sugars and alcohols more or less with the exception of laevulose and lactose. [This record should be compared with that of NOURY & ALALOU, this *Bulletin*, Vol. 20, p. 738.]

J. H. T. W.

SHOUSHA (A. T.). **Spontaneous Agglutination of the Cholera Vibrio in Relation to Variability.**—*Jl. of Hyg.* 1923. Dec. Vol. 22. No. 2. pp. 156–163. [16 refs.]

Of two strains of *V. cholerae* tested, one (a haemolytic strain) yielded two variants " S " and " R " resembling those described by ARKWRIGHT [*Jl. Path. & Bact.*, 1921, Vol. 24] as occurring in the colon-typhoid group.

The " S " variant forms a stable emulsion in physiological saline and causes general turbidity in broth and peptone cultures. The " R " variant agglutinates spontaneously in physiological saline solution. In broth culture it forms a deposit, leaving the supernatant fluid clear. Emulsions in weaker saline solutions are stable, so that agglutination tests can be carried out.

The two variants differ in the following characters : (*a*) Cultural characters on agar ; (*b*) Acid agglutination optima ; (*c*) Agglutination with specific sera, absorption of agglutinin and complement fixation ; (*d*) Pathogenicity—" S " more pathogenic than the " R " type ; (*e*) Resistance to heat—" R." to a slight degree more resistant than " S."

They are identical as regards : (*a*) Motility ; (*b*) Fermentation of carbohydrates ; (*c*) Formation of indol ; (*d*) Proteolysis ; (*e*) Haemotoxin production.

J. H. T. W.

YAMAGUCHI (Kinji), NAGAI (Shunji), UNNO (Sachitane) & OCHIAI (Sadatoshi). [**On the Strains of *Vibrio Cholerae* occurring in the 1922 Epidemic in Chiba Prefecture with Special Reference to El Thor Strain.**]—*Chiba Igakkwai Zasshi* (*Jl. of Chiba Med. Soc.*). 1923. Mar. Vol. 1. No. 2. [Summarized in *Japan Med. World.* Tokyo. 1923. Oct. 15. Vol. 3. Nos. 9 & 10. p. 226.]

The authors' investigations were carried out with reference to KABESHIMA's classification of vibrios. They found that to a certain extent his classification was established as to agglutination, complement fixation, bacteriolysis *in vitro*, etc.; but from results which the authors obtained from bacteriolysis *in vivo* and from infection experiments the classification was inapplicable, because all the strains had a common nature indistinguishable one from another. [See this *Bulletin*, Vol. 21, p. 75 (NOBECHI & ISHIKAWA).]

J. H. T. W.

SANO (Takeshi). [**Immunological Investigation of the Blood of the Persons inoculated with Cholera Vaccine, Cholera Convalescent Cases and Cholera Carriers.**]—*Namman Igakkwai Zasshi* (*Jl. South Manchurian Med. Soc.*). 1923. Feb. Vol. 11. No. 4. [Summarized in *Japan Med. World.* Tokyo. 1923. Nov. 15. Vol. 3. No. 11. p. 244.]

The author found that the quantitative relation of immune bodies, especially of bacteriolysin, in the circulating blood of the vaccinated was as strong as that in the blood of convalescents. The climax in the former was met in 3 weeks while it fell as low as that of the normal blood in 10 months. In the circulating blood of the carriers no immune bodies have practically been demonstrable.

J. H. T. W.

MASHITA (Shinichiro). [**Experiment on the Infection Route in the Intestines of the Cholera Vibrio. I. Communication.**]—*Keio-Igaku* (*Keio Med. Jl.*) 1923. June Vol. 3. No. 6. [Summarized in *Japan Med. World.* Tokyo. 1923. Dec. 15. Vol. 3. No. 12. pp. 281–282.]

Rabbits and guineapigs were injected intravenously with cultures of cholera vibrio and the distribution of the vibrios in their bodies was examined at certain intervals. The main route was through the common bile duct and a few were demonstrated entering the intestinal lumen by passing through the intestinal wall. [cf. this *Bulletin*, Vol. 18, p. 73 (Recent Advances, etc.); also Index for papers by SANARELLI, GREIG and others.]

J. H. T. W.

DONG-NGOC-DIEU & MILLOUS. **Érythèmes au cours du choléra.**—*Ann. de Méd. et de Pharm. Colon.* Paris. 1923. May-June-July-Aug. Vol. 21. [22 *sic.*] No. 2. pp. 204–209. [2 refs.]

That erythema may occur with cholera is well known. The authors record seven cases and describe two of these in detail. In all the seven cases the erythema appeared somewhat late: 5th to 10th day of the disease. Injections of serum and saline solution had been given and these may possibly provoke erythema in some cases.

J. H. T. W.

BANERJEE (Dhirendra Nath). **Post-Infusion Reaction in Cholera.**—*Calcutta Med. Jl.* 1923. Oct. Vol. 18. No. 4. pp. 445–452. [13 refs.]

This reaction is generally recognized, but, nevertheless, the author has written a very full and interesting paper giving minute particulars of infusions injected, the management of severe reactions, etc.

J. H. T. W.

ENTERIC FEVERS IN THE TROPICS.

VIEIRA (F. Borges). **Estudo epidemiologico da febre typhoide em S. Paulo. Epidemia 1920-1921.**—*Ann. Paulist. Med. e Cirurg.* 1922. Apr. Year 10. Vol. 13. No. 4. pp. 90–116. With 11 graphs.

Enteric fever is endemic in S. Paulo, but also occurs in epidemic outbreaks. The disease is more prevalent in the warmer months and the author quotes instances (as New York and Philadelphia) to show that the seasonal curve in places with a good water supply is reversed where this is bad. The chief causes of prevalence are given as, firstly, a defective water supply, the curve of incidence beginning to rise some 4–5 weeks after the onset of heavy rains which wash surface pollution into the wells; and, secondly, the plague of flies and consumption of salads and uncooked fruit.

587 cases were notified and for the purposes of this study 393 were carefully investigated. The incidence was found to be greatest between the ages of 16 and 20 years. The age-mortality figures are not of much value as the grouping is too comprehensive, the highest death rate being given as occurring between the ages of 20 and 50 years. Sex had but little influence on either incidence or mortality, the comparative rates being in both cases males to females as 5 to 4.

[Notification was perhaps not very thorough, but the following line of reasoning for computation of cases does not appear to be very reliable. Of the 587 cases notified 187 died (31·8 per cent.). But, argues the writer, there is no reason why the mortality should exceed 10 per cent. "This would imply 1,870 cases so that nearly 1,300 escaped notification!"] [cf. this *Bulletin*, Vol. 16, p. 447 (Rangel Pestana).]

H. Harold Scott.

STIBBE. **Typhoid on E.R.P.M.** [East Rand Proprietary Mines, Ltd.]. **Oral Administration of Vaccine.**—*Proc. Transvaal Mine Med. Officers' Assoc.* 1924. Jan. Vol. 3. No. 9. pp. 12–14.

During a small outbreak including 26 cases of typhoid fever the author gave a vaccine by the mouth to some 2,000 boys in Compound "A." Nine cases were admitted between September 27th and October 3rd. From October 5th to 8th daily doses of vaccine, together with an ox-bile pill were administered. The following table gives full particulars and compares the orally vaccinated group with the boys of Compounds "B," "C" and "D," who did not receive any vaccine:—

Typhoid on E.R.P.M., September 27th to December 31st, 1923.

(1) Incidence.

	September 27 to October 3.	October 5 to December 31.
Compound A. 2,000 boys.	Before vaccine. 9 cases in 7 days.	After vaccine. 3 cases already incubating when vaccine was given. 4 new cases.
Compound B, C and D. 8,000 boys.	No vaccine. 2.	No vaccine. 8.

(2) Clinical Course of Cases.

	Without vaccine.	With vaccine.
No. of Cases.	19.	7.
Died.	7 or 37 per cent.	2 or 29 per cent.
Returned to work.	9 or 47 per cent.	5 or 11 per cent.
Repatriated.	3 or 16 per cent.	—
Loss to Mine.	10 or 53 per cent.	2 or 29 per cent.
Duration of illness of survivors.		
Convalescence	12 c/s 242 days=20 days 12 c/s 155 days=13 days each	5 c/s 71 days=14 days each. 5 c/s 56 days=11 days each.
Total days lost.	397 days=33 days each	127 days=25 days each.
Relapses.	2.	None.
Symptoms	Delirium in one-third of cases Maximum temperature 104·5 Average Maximum 103·8	No delirium. Maximum temperature 102·8 Average Maximum 102·2
Condition as to weight at end of treatment.	12 boys lost 116 lbs. Average loss 9·6 lbs.	5 boys lost 6 lbs. Average loss 1·2 lbs.
Sequel.	One Osteitis of femur. One Otorrhoea (chronic). One abscess of jaw.	None so far.

J. H. Tull Walsh.

Cornwall (J. W.) & La Frenais (H. M.). **The Mechanism of Infection by** *B. typhosus.*— *Indian Jl. Med. Res.* 1924. Jan. Vol. 11. No. 3. pp. 883–913. With 6 charts. [6 refs.]

This careful experimental work on rabbits, illustrated with useful charts and tables, has led to the following conclusions :—

"1. The stomach of a rabbit forms an absolute barrier to the passage of *B. typhosus.*

"2. If *B. typhosus* be introduced into the intestinal canal of a rabbit beyond the stomach barrier it will flourish there.

"3. *B. typhosus* migrates from the lumen of the jejunum of a rabbit and can be found in the peripheral circulation within an hour.

"4. A jejunal injection of one agar slope of living typhoid bacilli does not generally cause serious illness in a rabbit.

"5. Given certain conditions, *B. typhosus* can pass the stomach barrier of man. When those conditions do not prevail the stomach of man will act as an efficient barrier.

"6. *B. typhosus* can, in small numbers, pass through the skin and probably also the conjunctiva and nasal and pharyngeal mucous membranes of rabbits. It is not, however, likely that the bacillus could succeed in establishing itself in the mesoderm of either the rabbit or man through these portals of entry.

"7. If the effect of any method of immunization is to establish a local immunity of the intestinal epithelium it should be possible to prove such immunity by giving an intrajejunal injection of living bacilli, which should not be followed by a large rise in the agglutination titre of the serum.

"8. Immunity against typhoid in man depends (1) on the degree of ability of the endoderm to prevent the passage of the baccilli through it, (2) on the degree of ability of the cells of the mesoderm to withstand the noxious effect of toxin liberated in it by the death of the bacilli which have penetrated the endoderm.

"Prophylactic treatment, therefore, should have a double aim in view.

"9. *B. typhosus* occasionally can be latent in the tissues of a rabbit for many months and then can break its bounds and cause a fatal issue."

J. H. T. W.

CHARLES (Havelock). **La fièvre typhoïde. Réponse au questionnaire pour l'Inde Britannique. [Questionnaire envoyé conformément à la décision prise par le Comité de l'Office International d'Hygiene publique en octobre 1922.]**—*Bull. Office Internat. d'Hyg Publique.* 1923. Sept. Vol. 15. No. 9. pp. 1210–1216. With 1 chart.

An official compilation from Indian Reports on the enteric fevers among troops, prisoners in civil jails and the general population.

J. H. T. W.

HEATSTROKE.

Weill (E.) & Bertoye. [**Heatstroke in Infants.**]—*Nourrisson.* Paris. 1923. May. Vol. 11. p. 145. [Summarized in *Jl. Amer. Med. Assoc.* 1923. Oct. 6. Vol. 81. No. 14. p. 1241.]

Eight out of 16 infants suffering from heatstroke died in a Lyons hospital during a hot wave in 1922. All seemed to be doing well when suddenly their temperature rose and remained high with no morning decline. The skin and mucous membrane of mouth and nose were dry, the pulse small and often uncountable; extreme restlessness but no convulsions and no gastro-intestinal trouble. The deaths occurred after three days. The eight that recovered showed no sequelae. Although the month was May the thermometer registered 93·2° F. in the shade. 86° F. is dangerous for infants especially when humidity is high. Cool baths ten to twenty minutes every three hours were of benefit to some cases.

J. H. Tull Walsh.

Finny (Charles M.). **Sunstroke or Heatstroke?**—*Indian Med. Gaz.* 1918. Oct. Vol. 53. pp. 361–369. [Received June, 1923.]

Work done in succeeding years and reviewed in Vols. 16, 18, and 20 of this *Bulletin* render unnecessary any notice of this belated essay, which, if it had arrived earlier, would have called for consideration in detail. The author has minutely examined the different forms of injury produced by direct and indirect sun power and gives a long list of "precautions."

J. H. T. W.

Fabris (Angiolo). **Osservazioni anatomo-istologiche sul colpo di calore.**—*Riforma Med.* 1923. Aug. 13. Vol. 39. No. 33. pp. 775–781. [24 refs.]

In addition to the author's careful record of the changes observed in the brain and other organs, he gives a useful bibliography with reference to French, German and Italian journals.

J. H. T. W.

TROPICAL OPHTHALMOLOGY: A REVIEW OF RECENT ARTICLES.

CONJUNCTIVITIS.—There have been several interesting communications on this subject.

Samoan Conjunctivitis. HUNT [1] has been studying this disease bacteriologically with the aid of cultures, and has been able to make some experiments on healthy subjects. He has arrived at the conclusion that the diplococcus of Samoan conjunctivitis is an attenuated form of gonococcus.

Folliculosis of the conjunctiva is to be sharply distinguished from trachoma (VELDEE) [2]; its maximum of incidence is at 5 to 6 years of age, and it steadily disappears as the child grows up. It is definitely related to tonsilar trouble, but the exact relation has not been determined. As compared with trachoma it runs a brief course and disappears spontaneously without sequelae.

Membranous Conjunctivitis. The Ophthalmological Society of Egypt devoted special attention in their 1923 Session to this subject. GIRGIS [3] published the notes of an epidemic of 19 cases of diphtheritic conjunctivitis at Assiout in September 1922, whilst three more diphtheritic cases and 40 non-diphtheritic appear in the same year's report. MACCALLAN & RASHEED BEY [4] point out that the staphylococcus, the streptococcus, the pneumococcus, the gonococcus, and the Koch-Weeks bacillus as well as the Klebs-Loeffler organism may each and all produce a membranous conjunctivitis. The non-diphtheritic cases are less severe than the diphtheritic. Infection with the Klebs-Loeffler bacillus may take place (1) directly by contact, or by fly-transmission from case to case; (2) through a diphtheria carrier who presents no symptoms; (3) by such a carrier suffering from nasal catarrh; (4) through dust infected by dry membranes, etc.; and (5) by want of care in the out-patient department. Paresis of accommodation may occur as the result of a previously undiagnosed attack of ophthalmia (SOBHY BEY) [5] though such an event would appear to be a very rare one. The true diphtheritic conjunctivitis appears in Egypt to pass from eye to eye and not to be acquired by contact with the usual forms of the disease. Corneal ulceration and loss of one or both eyes is very common, due to the fact that diphtheritic, like other forms of tropical conjunctivitis is often a mixed infection. Methods of prophylaxis and treatment are described in the papers quoted.

IRREGULAR PRACTITIONERS.—In 1921 48 cases were observed of a peculiar affection of the lids amongst the out-patients of an Egyptian hospital. It proved to be a primary syphilitic infection of the lids as the result of a practice by two female quacks of licking their patients' eyes with their tongues as an alleged cure for various infections, or with the view of extracting hypothetical worms from their

1 HUNT (D.). Samoan Conjunctivitis: A Study of the Causative Organism.—*U.S. Naval Med. Bull.* 1923. Oct. Vol. 19. No. 4. pp. 410–413.

2 VELDEE (Milton V.). An Epidemiological Study of Folliculosis of the Conjunctiva.—*U.S. Public Health Rep.* 1923. Dec. 7. Vol. 38. No. 49. pp. 2877–2887. With 1 chart. [2 refs.]

3 GIRGIS (A. M.). An Outbreak of Diphtheritic Conjunctivitis.—*Ophthal. Soc. of Egypt, Bull. of* 1923. pp. 36–42.

4 MACCALLAN & RASHEED BEY. Introductory Address on Membranous Conjunctivitis.—*Ophthal. Soc. of Egypt, Bull. of* 1923. pp. 25–35.

5 SOBHY BEY (M.). Paralysis of Accommodation after Faucial Diphtheria without Mydriasis.—*Ophthal. Soc. of Egypt. Bull. of* 1923. pp. 43–45.

eyes. (SADEK).[6] Beside this may be placed an epidemic of 56 cases of gonorrhoeal conjunctivitis amongst German soldiers. The source of the infection was traced to the soiled fingers of an attendant, whose duty (!) it was to avert the lids for the routine inspection of the eyes (LINDNER).[7]

ECLIPSE AMBLYOPIA.—WRIGHT & VENKATARANGAM NAIDU[8] have examined 21 cases of this condition at Madras after the eclipse of the sun on September 21st 1922. The most striking features of a very interesting communication are (1) the mildness of the damage inflicted, (2) the marked and rapid improvement which occurred, and (3) the absence of definite scotomata. They also observed macular changes in the retina of a man who had been an habitual sun-gazer for three years.

DAMAGE TO THE EYE BY LIGHTNING.—A lady of 23 was rendered unconscious for 20 minutes after being struck by lightning. The symptoms included clouding of the aqueous and cornea, cyclitis, progressive opacification of the lens, and inflammation of the retina and choroid. The lens opacities commenced over four weeks after the accident (WAARDENBURG).[9] GJESSING[10] described the characteristic features of an electric cataract examined with the Gulstrand slit-lamp in a boy of 12, who, one year earlier, short circuited a 50,000 volt current.

ACCIDENTAL INJURIES.—GANGULY'S[11] two cases of severe eye injury, one from the bursting of a soda-water bottle, and the other from that of a bottle containing an effervescing mixture, which was being made up by a compounder, emphasize the lesson that strong leather covers should be provided for and used when opening soda-water bottles in the Tropics, and that a similar precaution should be taken in dispensaries there.

AMOEBIC IRITIS.—It has for some time past been recognised that iritis may be a sequel of amoebic dysentery. Lloyd MILLS[12] of Los Angeles has reported four cases of chronic recurrent, intractable, bilateral iritis, associated with constipation, lassitude, anaemia, low blood pressure, tenderness of the colon, and the presence in the stools of *Entamoeba histolytica*, in which the adoption of a specific antiamoebic treatment led to prompt and lasting cure both of the amoebiasis and of the iritis in two cases, whilst the other two were reported as greatly improving under treatment. Amoebic infection of the human intestine is very wide spread ; diarrhoea is not an essential sign of the infection, and in the temperate zone all signs of dysentery are usually absent. Mills appears to have discovered for us one more of the hidden sources of auto-intoxication that have so long baffled the ophthalmologist.

---

6 SADEK (M. T.). Palpebral and Conjunctival Syphilitic Manifestations.—*Ophthal. Soc. of Egypt. Bull. of.* 1923. pp. 82–88. With 2 plates.

7 LINDNER (K.). Ueber eine Endemie von 56 Gonoblenorrhöen.—*Klin. Monatsbl. f. Augenh.* 1920. Vol. 65. pp. 637-642.

8 WRIGHT (R. E.) & VENKATARANGAM NAIDU (T.). Eclipse Amblyopia.—*Amer. Jl. Ophthal.* 1923. Oct. Vol. 6. p. 812.

9 WAARDENBURG (P. J.). *Neth. Ophthal. Soc.* 1920. Dec. Reported in *Amer. Jl. Ophthal.* 1923. Jan. Vol. 6. No. 1. p. 42.

10 GJESSING (H. G. A.). A Case of Cataract electrica, examined with Gulstrand's Slit-lamp.—*Brit. Jl. Ophthal.* 1922. Vol. 6. pp. 447–451.

11 GANGULY (S. K.). Some Eye Cases.—*Indian Med. Gaz.* 1923. Aug. Vol. 58. No. 8. p. 379.

12 MILLS (Lloyd). Amoebic iritis occurring in course of non-dysenteric amoebiasis.—*Arch. of Ophthal.* 1923. Nov. Vol. 52. No. 6. pp. 525–545.

Leprosy.—Van Driel's [13] paper, founded on his study of the disease in Sumatra, is a valuable contribution, which will well repay a thorough study in the original. He has two institutions under his care, in one of which the patients are agriculturists, singularly free from syphilis, yaws, tubercle, trachoma, and gonorrhoea ; in the other the patients are estate coolies, mostly Chinese, amongst whom syphilis and trachoma are very common. In the former hospital there are many slight and early cases of leprosy, whilst in the latter the disease is advanced in type. Comment is made on a number of interesting clinical points. Van Driel is disposed to attribute a leprotic origin to a form of superficial punctate keratitis, which occurs quite early in the disease, and in about 3 to 4 per cent. of the cases. He also finds that a leprotic iritis or iridocyclitis occurs in quite a large percentage of cases (14·50 in one institution, and 22 per cent. in the other). He holds that the lepra bacilli find their way into the eye via the blood-stream, and not by extension from the surrounding skin. The amount of blindness actually due to leprosy in Sumatra is astonishingly small as compared with that noted in other countries where the disease prevails.

Tubercle.—Meyerhoff [14] has been studying tuberculous disease in Egypt, and has satisfied himself that some of the cases of endogenous iritis met with in that country are due to the tubercle bacillus, and that considerable benefit may be obtained in suitable cases by the use of tuberculin. He does not think that tuberculosis of the eye is very rare in Egypt. The reviewer would go further and record his belief that it is far commoner than it is generally supposed to be in tropical countries, and that there is a great call for the use of accurate and modern methods of diagnosis in this connexion.

Cataract.—Mahmoud Zaky [15] insists on the importance of attention to the teeth before cataract extraction is undertaken and draws attention in this connexion to the foul dental condition of many tropical patients. Dr. MacCallan has directed that every patient before an operation for cataract or glaucoma in Egypt must have any decayed teeth removed, and the mouth carefully cleansed ; a complete set of tooth forceps is provided for the purpose in every ophthalmic hospital, an example which might with advantage be widely followed. Howard [16] speaks of the value of the conjunctival bridge as a safeguard against vitreous loss and other trouble in cataract extraction in China. Cruickshank [17] lays stress on the difficulties that surround the operating ophthalmic surgeon in India, and rightly insists on the need for a careful routine examination of each patient before operation

---

13 Van Driel (B. M.). [Affections of the Eye in Leprosy.]—*5th Congress Far Eastern Assoc. Trop. Med. held at Malaya, Sept.* 3–17, 1923. Singapore.

14 Meyerhoff. Some Observations regarding Tubercular Eye-Diseases in Egypt.—*Ophthal. Soc. of Egypt. Bull. of* 1923. pp. 126–130.

15 Mahmoud Zaky. Buccal Infection and Eye Diseases. Two Cases of Insidious Iritis appearing some Days after Cataract Extraction and relieved only by Removal of Decayed Teeth Roots.—*Ophthal. Soc. of Egypt. Bull. of* 1923. pp. 122–125.

16 Howard (Harvey J.). A Conjunctival Bridge as a Safeguard against Vitreous Loss in Cataract Extraction.—*China Med. Jl.* 1923. Sept. Vol. 37. No. 9. pp. 709–715. With 1 plate. [6 refs.]

17 Cruickshank (M. M.). A Note on the Complications following 1,322 Consecutive Cases of Cataract Extraction.—*Indian Med. Gaz.* 1923. Oct. Vol. 58. No. 10. pp. 461–467.

is undertaken. BELL,[18] speaking from American experience, advises the instillation of two drops of a 1 per cent. silver nitrate solution into the eye before cataract extraction in order to promote phagocytosis and the formation of antibodies; the fact that he has abolished suppuration from his clinic by so doing should encourage tropical surgeons to imitate him.

DIABETES.—DE[19] publishes a case of a young woman whose urine was loaded with sugar and who presented complete loss of all movements of the eyeball together with ptosis and other symptoms. Other treatment failing, the glycosuria was attended to with noticeable return of the movements of the eyeball. PETERSON,[20] speaking from experience in China, considers that, when operating on diabetic cases, it is unwise to stop carbohydrate food as the restriction may induce acidosis and delay healing.

GLAUCOMA.—In publishing the notes of a case in which an affection occurred two years after trephining, MAZNY Bey[21] raised a discussion in a meeting of the Ophthalmological Society of Egypt "as to whether in our country of Egypt, late infection is rare or common," with a view to determine whether the Elliot operation can still be retained as the operation of election for the treatment of non-congestive glaucoma in all the Egyptian hospitals. He was led to do this by the bad results which have been published from Central Europe. A number of speakers took part in the discussion, from which there emerged certain very definite conclusions: (1) That Elliot's operation for chronic primary glaucoma is the operation of election in Egypt; (2) that the technique in that country in performing that operation is at a high level; several of the speakers appeared to think that the bad results in Central Europe were due to defective technique; (3) that late infection is a rare complication in Egypt, despite the fact that conjunctival infections are abnormally common there; and (4) that the trephine operation should certainly not be abandoned in that country.

GANGULY[22] records a case of glaucoma following epidemic dropsy and provoked by the instillation of a 5 per cent. cocaine solution. KIEP[23] advocates the use of butyn in preference to cocaine in tropical practice and especially for glaucoma work; he says it is more powerful, more rapid, more prolonged in its action, and less toxic than cocaine, and that it does not dry the cornea or dilate the pupil; it produces no ischaemia and it can be boiled without impairing its efficiency. The *British Journal of Ophthalmology* for April 1924 (p. 172) sounds a note of warning on the subject of the use of this drug in other specialities. It would be well for ophthalmic surgeons to read what it has to say.

---

18 BELL (George H.). Further Observations on "New Methods of Preventing Post-operative Intraocular Infections." Report of 1,250 Successful Cases.—*Arch. Ophthal.* New York. 1923. Vol. 52. pp. 436–447.

19 DE (J. C.). A Case of Ocular Paralysis with Glycosuria.—*Indian Med. Gaz.* 1923. Dec. Vol. 58. No. 12. pp. 589–590.

20 PETERSON (R. A.). Some Valuable Aids in Ocular Therapeutics.—*China Med. Jl.* 1923. Oct. Vol. 37. No. 10. pp. 842–847. [5 refs.]

21 MAZNY Bey. A Case of Late Infection after Elliot's Sclerocorneal Trephining and Some Remarks on Incidence in Egypt.—*Ophthal. Soc. of Egypt. Bull. of* 1923. pp. 113–116.

22 GANGULY (S. K.). Some Eye Cases.—*Indian Med. Gaz.* 1923. Aug. Vol. 58. No. 8. p. 379.

23 KIEP (W.). The Use of Butyn in Ophthalmic Practice.—*Ophthal. Soc. of Egypt. Bull. of* 1923. pp. 89–100.

Eye Conditions in the Tropics.—Stuckey[24] finds that errors of refraction and eye strain are very common in China. In Pekin University 50 per cent. of the students required glasses; in a boys' school 45 per cent. and in a girls' school 39 per cent. had the same need. There is a steadily increasing number of students requiring a correction of their refraction and practically nothing is being done for them. Stuckey therefore puts forward a number of proposals for the organization of the Missionary Societies with a view to taking this work in hand. Ling[25] discusses the causes of blindness amongst the Chinese. Trachoma is the paramount factor in Pekin, and he believes in North China generally, and probably in the whole of China. The figure for gonorrhoeal blindness is low and is contrary to what has been previously stated for China. The cataract rate (7·8 per cent.) is also low, whilst the glaucoma rate is very close to it (6·8 per cent.); this is in marked contrast with Indian experience. His dictum "stamp out trachoma, and an immense number of people will be saved from going blind in China" is of practical interest. De Ruyter[26] compares the relative frequency of certain eye diseases in Holland and in Java. He lays stress on the mental attitude of the Javanese and on the appalling prevalence of trachoma amongst them. Cataract is not more frequent in Java than in Europe and the eye symptoms of malaria are said to be negligible in the island. Xerosis of the cornea and keratomalacia are very common amongst the Javanese. Johnstone,[27] in a medical survey of the Kavirondo District of Kenya Colony, places the disability due to eye disease there at 1·3 per cent. among the children and 3 per cent. among the adults. The interest lies in the fact that this is one of the earliest communications dealing with the subject.

Ophthalmomyiasis.—Stark's[28] case of ophthalmomyiasis presents several features of interest:—(1) The maggots found in the patient's eye were deposited there by a flying insect; sufficient evidence has recently accumulated to place this method of infection beyond dispute. (2) The signs and symptoms caused by the parasites were very marked. (3) The larvae were identified as those of *Oestrus ovis*, the common sheep bot-fly, which deposits its larvae in the nostrils of the sheep in the course of its flight. Davis,[29] in a case of myiasis of the ear, was able to kill the larvae and relieve the symptoms by the instillation of a lotion of equal parts of milk and chloroform, when other stereotyped methods of treatment had failed; doubtless the same solution would act in orbital cases.

24 Stuckey (E. J.). A Plea for the Routine Examination of the Vision of School Children in China.—*China Med. Jl.* 1923. Aug. Vol. 37. No. 8. pp. 650–656.

25 Ling (W. P.). Causes of Blindness among the Chinese.—*Nat. Med. Jl. China.* 1923. Sept. Vol. 9. No. 3. pp. 175–184. [2 refs.]

26 De Ruyter (J.). Oogziekten op Java.—*Geneesk. Tijdschr. v. Nederl.-Indie.* 1923. Vol. 63. No. 6. pp. 945–950.

27 Johnstone (F. J. Carlyle). The Biology and Pathology of the Natives of the Central Kavirondo District, Kenya Colony.—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923, Dec. 13, & 1924, Jan. 17. Vol. 17. Nos. 6 & 7. pp. 369–377.

28 Stark (H. H.). Ophthalmia Myiasis Externa, due to Larvae of *Oestrus ovis*.—*Jl. Amer. Med. Assoc.* 1923. Nov. 17. Vol. 81. No. 20. pp. 1684–1685. With 2 figs.

29 Davis (L. L.). Myiasis of the Ear.—*U.S. Naval Med. Bull.* 1923. Sept. Vol. 19. No. 3. pp. 345–348.

Filaria Loa.—Kimberlin [30] removed a *Loa loa* from the conjunctiva by seizing it first with forceps and then instilling cocaine as a preliminary to the operation.

Quinine Amblyopia.—The outstanding feature of interest in Evans' [31] case was the appearance of fundus changes, viz., (1) plaque-like spots of exudate found at intervals along the arteries, and (2) small disciform spots scattered throughout the fundus which faded and were replaced by others in different situations. Bollack and Lagrange [32] also contribute a case of permanent and severe visual damage as the results of the treatment of malaria by quinine following a dose of 3 gms.; the patient had been taking quinine for some time previously.

Hypopyon Keratitis.—Iacobellis [33] has treated seven cases of severe hypopyon ulcers with subconjunctival injections of milk with very gratifying results. Other treatment was also adopted. Injections of 0·50 cc. to 1 cc. of fresh milk, boiled for 5 minutes, were made under cocaine every other day, until complete recovery, under the bulbar conjunctiva. Hot fomentations were applied after the injections. General reaction was absent and local reaction was not severe.

Trachoma.—The literature of this subject is becoming very large—one might almost say disproportionately so—in comparison with that of tropical ophthalmology generally. Indeed, a large number of the papers published are not of very great interest, but they reflect the growing anxiety in many lands as to the progress of this disease, and the conviction that a great deal could and should be done to stamp it out. McMullen [34] records the results of a three-year trachoma campaign carried out in Knott County, Ky., in the light of a survey made ten years later; it would appear that one of the worst infected regions of America has been practically cleared of the disease within a period of ten years as a result of this campaign. Again in a Public Health Congress held at Marseilles at the close of 1922 [35] the same subject came up, and it was proposed to form a National Anti-trachomatous League amongst the doctors and administrators interested in trachoma with headquarters in Paris, and with local branches in the large colonial centres. Statutes for the proposed League were drawn up and presented to the meeting.

In October 1923 we find the League Against Trachoma meeting in the Pasteur Institute, Paris, and discussing amongst other subjects (1) trachoma in Lorraine; (2) new researches on the histology and

---

30 Kimberlin (J. W.). *Filaria loa.* Report of Case of Removal from the Subconjunctival Tissues.—*Jl. Amer. Med. Assoc.* 1923. Nov. 17. Vol. 81. No. 20. pp. 1685–1686. [10 refs.]

31 Evans (J. N.). Quinin Amblyopia.—*Amer. Jl. Ophth.* Chicago. 1923. 3rd Ser. Vol. 6. pp. 271–275.

32 Bollack (J.) & Lagrange H.). *Soc. d'Ophth. de Paris.* 1923. Dec. Rep. *Amer. Jl. Ophth.* 1923. Vol. 6. p. 852.

33 Iacobellis (G.). *Arch. di. Ottal.* 1922. Vol. 29. p. 468.

34 McMullen (John). Results of a Three-Year Trachoma Campaign begun in Knott County, Ky., in 1913. As shown by a Survey in the same Locality 10 years later.—*U.S. Public Health Rep.* 1923. Oct. 26. Vol. 38. No. 43. pp. 2463–2466.

35 *Congrès de la Santé Publique et de la Prévoyance Sociale, Marseille, 11–17 Septembre 1922. Comptes Rendus des Séances.* pp. 404–450.—1922. Marseille. Commissariat Général de l'Exposition Coloniale, 5 rue Noailles.

cytology of trachoma, (3) the difficulties of diagnosing incipient trachoma, (4) trachoma in Marseilles in 1923, and (5) the fight against trachoma with an advocacy of propaganda by the aid of the film. GIFFORD[36] has discussed the incubation period of trachoma, which he fixes at one week, and the contagiousness of the disease even in its atrophic stage. He does not believe that the African native is immune to trachoma, but thinks that his so-called immunity is merely a question of race segregation. At the Marseilles Congress above referred to the comparative rarity of the disease in Madagascar was remarked upon.

EL RASHEED Bey,[37] in a paper full of interest, and redolent of hard work and close observation, discusses the vascularization of the cornea so frequently seen in the eyes of Egyptians, and decides that the presence of a few short vessels on the upper corneal margin seen in the eyes of his compatriots is not evidence of past trachoma. SMITH[38] writes from China on the bacteriology of the disease and makes the following interesting points: (1) The Credé method is specific against the gonococcus but fails against an inclusion blenorrhoea; (2) the inclusions are not involution forms of the gonococcus; (3) both children and adults may have an infection of the eyes or of the genitalia either by the gonococcus, or by the inclusion disease, or by both together; (4) the inclusion disease produces scar tissue formation just as trachoma does; the gonococcus produces no scarring; (5) the inclusion disease is analogous or identical with trachoma. The above conclusions are largely borrowed from LINDNER'S work. A number of papers have appeared on the treatment of the disease:—ADDARIO LA FERLA[39] enthusiastically advocates Sculco's method. LACAT,[40] of Paris, recommends a very drastic *brossage* with the use of 1 in 500 cyanide of mercury. JUNÈS[41] uses subconjunctival infiltrations of solutions of the latter drug. CASSIMATIS[42] has been unfavourably impressed with the results of Abadie's new method and enters a warning against it. Hassan BARRADA[43] is strongly in favour of a modified Combined Excision Operation in selected cases, and TEWFIK[44] writes on the advantages of the continuous buried suture in septic cases where Snellen's Operation for trichiasis is undertaken.

R. H. Elliot.

---

36 GIFFORD (H.). *Amer. Jl. Ophthal.* 1923. Mar. Vol. 6. No. 3. p. 221.

37 EL RASHEED Bey (A. F.). Is the presence of a Few Short Vessels on the Upper Corneal Margin in an Egyptian Pathognomonic of Trachoma?—*Ophthal. Soc. of Egypt. Bull. of 1923.* pp. 61–72.

38 SMITH (D. V.). The Bacteriology of Trachoma.—*China Med. Jl.* 1923. Nov. Vol. 37. No. 11. pp. 887–891. With 4 text figs.

39 ADDARIO LA FERLA. *Arch. di Ottal.* 1922. Vol. 29. p. 219.

40 LACAT. Traitement de la conjonctivite granuleuse.—*Ann. d'Ocul.* Paris. 1923. Vol. 160. p. 579. & *Clin. Ophth.* Paris. 1923. Vol. 27. pp. 363–373.

41 JUNÈS (Emile). Le Trachomthérapie par l'infiltration sous-conjonctivale de cyanure de mercure.—*Gaz. des Hôpit.* 1923. Feb. 20 and 22. Vol. 96. No. 15. pp. 237–242. & *Clin. Ophth.* Paris. 1923. Vol. 27. pp. 183–197.

42 CASSIMATIS (C.). Blépharoptose consécutive au traitement du trachome par la nouvelle méthode du Dr. Abadie et quelques reflexions sur cette méthode.—*Ophthal. Soc. of Egypt. Bull. of 1923.* pp. 75–81.

43 BARRADA (Hassan). A Few Hints on the Combined Excision Operation with a New Device for Selected Cases.—*Ophthal. Soc. of Egypt. Bull. of 1923.* pp. 108–110.

44 TEWFIK (M.). The Continuous Buried Suture in Snellen's Operation for Trichiasis and its Preference in Cases with Unclean Lids, Conjunctival Discharge, Corneal Ulcers, etc.—*Ophthal. Soc. of Egypt Bull. of 1923.* pp. 111–112.

MISCELLANEOUS.

Müller (O.) & Justi (K.). **Beitrag zur Kenntnis der klimatischen Bubonen.**— *Arch. f. Schiffs- u. Trop.-Hyg.* 1914. Dec. Vol. 18. Beiheft 8. 32 pp. With 8 charts and 1 coloured plate [31 refs.] [Received 1923.]

The conclusions of this careful paper from Hong Kong, where the authors saw 30 cases of climatic bubo and studied 8 with care, are to the following effect. Neither clinically nor histologically does the disease tend towards recovery; if left to itself it progresses. It should therefore be dealt with surgically as early as possible. The point of entry of the virus was in three instances surmised to be an infiltration of the prepuce and the authors believe that early examination might demonstrate this in every case. They suggest that the germ might be discovered by inoculating the gland juice into healthy skin and they believe it to be one that acts on gland tissue like the diphtheria bacillus.

Three questions remain unanswered: Why is climatic bubo associated with hot countries? Why is it chiefly met with in ships' crews and at Hong Kong, in three-fourths of the cases, in the engine room personnel? Why is it not found in women and especially in prostitutes who must be regarded as the carriers of the infection?

The histories of the 8 cases are set out at length and in tabular form and it is noted that in every instance coitus had taken place three weeks from the onset of lymphadenitis [see this *Bulletin*, Vol. 1, p. 474, and Vol. 2, p. 207]. Three cases infected at Batavia had visited the same brothel.

A. G. B.

Butler (C. S.). **Climatic Bubo.**— *U.S. Nav. Med. Bull.* 1924. Jan. Vol. 20. No. 1. pp. 1–6.

A didactic paper without personal observations. The author quotes Ruge, in 60 per cent. of whose 36 cases the buboes resolved, and recommends expectant treatment. Spear, to whom Butler submitted his paper, does not agree that 60 per cent. recover without operation [nor is this the general opinion] and advises a clean dissection of the glands with the removal of all the overlying skin and no attempt to sew the wound up. He treated thus 10 cases in Cuba.

A. G. B.

Lister (Spencer). **The Use of Pneumococcal Vaccine.**—*Proc. Transvaal Mine Med. Officers Assoc.* 1924. Jan. Vol. 3. No. 9. pp. 1–8. [16 refs.] Also *S. African Med. Rec.* 1924. Mar. 22. Vol. 22. No. 6. pp. 115–122. [16 refs.]

This article deals both with the prophylactic and with the therapeutic use of pneumococcal vaccine. At the outset the author defines his terms, to make it quite clear that his discourse throughout relates to a specific disease, acute lobar pneumonia, due to a specific [or generic] pneumococcus.

In discussing the history of the prophylactic use of pneumococcal vaccine [a history with which the South African Institute and the author's own name are identified] the author first refers to the early failure of Wright, in 1911–12 (before it became known that several

different strains of pneumococcus exist) to demonstrate, either by laboratory methods or by empirical tests, any particular immunity-response in the specifically inoculated or infected blood. Subsequent work at the Institute established the facts (1) that about the time of crisis (though not in the early stages of the disease) the patient's blood, in 90 per cent. of cases, contains antibodies (agglutinins and "opsonins") in abundance, and (2) that these antibodies can be evoked experimentally in rabbits and render the vaccinated animals immune, and also in man by suitable vaccine.

Going on to the results of the practical application of this riper knowledge: (1) The Institute having ascertained that 70 per cent. of cases of primary lobar pneumonia among local native miners were due to infection with the pneumococcus-groups A, B or C, 10,866 recruits admitted during a term of 9 months to the "Crown" mines were inoculated with a vaccine containing only these pneumococcus-groups: during that term not one case of pneumonia due to A, B, or C was observed, whereas 82 cases due to other pneumococcus-groups occurred with a case-mortality of 14·63 per cent., and among the "seasoned" natives living on the same mines but outside the "experimental" area the case mortality was 34·7 per cent. (2) During the experimental use of the vaccine for a year (1916–17) the notoriously heavy pneumonia mortality of the "Premier" mine fell to about 1 per 1,000, and of the "De Beers" mines more than 50 per cent. (3) During a term of six years (1917–1922) since the introduction of this vaccination for recruits on the Witwatersrand mines (3 doses at 7 days' interval was the ideal of attainment proposed in 1918) the annual death-rate for pneumonia, which in 1916 had been 5 per 1,000, has only once been 4 per 1,000—in 1917 it was 2·65, and in 1922 it was 1·68 per 1,000—and this notwithstanding the 1918 pandemic of influenza and its aftermath of pulmonary liabilities. The author effectively discounts the argument that these figures can be explained by a general improvement in hygienic circumstances. He refers, next, to work done outside South Africa, particularly to that on monkeys by Blake and Cecil and by Cecil and Steffen, whose earlier experiments appeared to shake, but whose later experiments, with larger dosage, corroborated his own conclusions. Allowing that improvements are possible, by increasing the dosage, or by adopting the intravenous route, he gives the following account of the vaccine prepared at the South African Institute for Medical Research:—

It "contains 8,000 millions of pneumococci per cc., comprising eight different pneumococcal groups. The method of preparation is as follows:—Cultures of the pneumococcus are grown on four human blood-agar slants. The growths from these slants are inoculated into four one litre bottles of trypsinated bullocks' hearts' broth, the growth of one slant to each one litre bottle. After incubation for about eight hours at 37° C. the contents of these four bottles are used to inseminate 40×1 litre bottles of similarly prepared broth. These are incubated for six or seven hours at 37° C. The contents of each bottle are then examined microscopically; if the growth is a pure culture and no autolysis has occurred, the broth is run through a Sharples centrifuge. In this machine the cocci are caught in a previously sterilised metal cylinder, from which they are collected and suspended in normal saline; their number is estimated by the opacity method. The suspension is heated to 60° C. for one hour, and allowed to cool again before the addition of 1 per cent. phenol. When this procedure has been applied to the eight different groups of pneumococcus, the vaccine for final use is made by diluting the concentrated suspensions derived from the centrifuge, so that each cc. shall contain 1,000 millions of pneumococci of

each of the eight groups, suspended in normal saline containing ·5 per cent. of phenol. This vaccine is then bottled, and a sample taken from each bottle and tested for sterility before the product is issued. The prophylactic dose is 1 cc. to be repeated three times, an interval of five to seven days intervening between the doses."

The author turns to the therapeutic use of the vaccine in a different spirit, as a matter more of opinion than of exact experimental evidence. He speaks of a batch of 40 severe cases treated by himself with intravenous doses of 5 to 20 thousand million pneumococci grown on human blood-agar. The treatment gave the patients some relief, after in most cases a short rigor. The estimated mortality of these cases was 10 per cent. Examination of the blood during the progress of the disease subsequent to the inoculation revealed the presence of antibodies not only against the pneumococcus responsible for the original infection, but also against other pneumococcus groups present in the vaccine. In other experiments the author has found that the antibodies are slow in development, even after very large doses of vaccine by the intravenous route—about 6 days in man. His conclusion from this amount of experiment is rather in favour of the vaccine if it be given very early in the disease and in very large doses.

A. Alcock.

Malone (R. H.). **A Note on the Types of Pneumococcus found in the Punjab and North-West Frontier Province of India.**—*Indian Jl. Med. Res.* 1924. Jan. Vol. 11. No. 3. pp. 947–949.

The following is the author's summary :—

"In the Punjab and North-West Frontier Type I pneumococcus is a common causal agent in pneumonia. Types II and III are probably less common than in Europe or America, while 52 per cent. of the cases are caused by strains belonging to the group known as Type IV.

Among the Type IV strains there is one fairly large sub-group which includes 25 per cent. of the strains tested, and another including 9 per cent. The remaining strains were agglutinated only by the homologous sera."

A. A.

Le Roy des Barres. **Le Cancer au Tonkin.**—*Rev. Méd. et Hyg. Trop.* 1924. Jan. Vol. 16. No. 1. pp. 5–14. With 2 charts. [8 refs.]

The author, although he gives us some tables of statistics, speaks with considerable emphasis of the worthlessness of medical statistics among native populations of tropical countries. Many there are who agree with him, and will prefer a summary of his general conclusions to a careful analysis of his tables.

The number of cases of malignant disease among natives of Tonkin and Hanoi appears to be increasing and will continue to do so while medical administration goes on extending and improving and more patients come to be examined by European doctors. "Cancer," under which name the author includes carcinomas, sarcomas, and all other malignant growths, is perhaps less frequent in hot than in temperate climates ; it is of moderate frequency among the natives of Tonkin and has been observed more often in men than in women. Epithelioma of all varieties occurs, the form in which bird's nest bodies are found being common, the melanotic form rare. Epithelioma

of the penis constitutes 16 per cent. of the malignant tumours observed. Cancer of the vulva is perhaps more frequent, that of the mamma much less so than in Europe. Cancer of the uterus is frequent, as also is cancer of the stomach (though nothing like so common as gastric ulcer). Cancer of lips and tongue is rare in Tonkin, but much commoner in Cochin China. Cancer of oesophagus and intestine are very rare, of rectum never yet observed. Primary cancer of liver is frequent in Tonkin. Sarcoma of different types has been observed in muscles, glands, bone, kidney, orbit, and neck. Lymphocytoma of the neck, of a truly malignant character, is quite common.

A. A.

Dolbey (Robert V.) & Mooro (A. W.). **The Incidence of Cancer in Egypt. An Analysis of 671 Cases.**—*Lancet.* 1924. Mar. 22. pp. 587–590.

The authors have analysed all the cases of malignant disease that have attended the Kasr el Ainy Hospital at Cairo for the last 4 years and give here the results tempered by their own experience. They give them frankly for what they are worth, but, as they say, the records of the greatest hospital of Egypt must have some significance as a criterion for the whole country. Their principal generalizations are as follows :—

In proportion to population, the number of cases of malignant disease is probably less in Egypt than in England. The anatomical distribution of such disease is different. The incidence among the negro element is not different from that of other elements of the population. There is no direct causal connexion between cancer and parasitic diseases. There seems to be no connection between cancer of the tongue and syphilis. Malignant disease of bone, skin, and skin-appendages appears to be more common than in Europe or America. There is a definite relation, " from a negative point of view apparently," between the incidence of cancer and gastric ulcer. There is no probable relation between gall-stones and cancer of the liver (nor is typhoid fever a predisposing factor in the production of gall-stones). The proportional incidence of cancer of the breast is probably the same as in Europe, but chronic interstitial mastitis, which is regarded by some pathologists as a prae-cancerous condition, is practically unknown. The progress of cancer in Egypt is less rapid, the involvement of glands less marked, and metastasis less frequent. There seems to be some definite relation between cancer and diet ; the use of simple vegetable foods and the complete abstinence from alcohol in the country districts seems to be consistent with the non-appearance of cancer of the intestinal tract ; while the use of preserved foods and of alcohol by the Europeanized population of the towns may explain the occurrence there of cancer of the stomach and intestine (as well as of gastric and duodenal ulcer, gall-stones, and appendicitis). The almost complete absence of nerve diseases among the simple fellaheen, their immemorial quietude and incapacity for worry must also have some influence on the incidence and course of cancer in Egypt.

As regards particulars, the following is the record of four years : Cancer of breast, 75 cases ; of lip, 31 ; of tongue, 25 ; of uterus, 25 ; of gall-bladder and vicinity, 10 ; of stomach, 8 ; of rectum, 7 ; of oesophagus, 6 ; of liver, 4 ; epithelioma of scalp, 30. Sarcoma of

bones, 98 cases. Malignant disease of bladder, 51 cases; of larynx, 29; of thyroid, 15. Rodent ulcer, 41 cases (commonly of orbit). Cerebral tumour, 11 cases.

A. A.

Van Gaasbeek (C. B.). **Cancer in St. Croix, Virgin Islands.**—*U.S. Nav. Med. Bull.* 1924. Jan. Vol. 20. No. 1. pp. 31–35.

Between January, 1921, and July, 1923, fourteen authentic cases of cancer occurred in the St. Croix hospitals among 5,720 treated; all epithelioma or carcinoma. The population is 13,500. The author considers this a low rate [no age distribution figures are given], and in seeking to account for this quotes opinions of many authorities, among whom one assigns an important rôle in causation to the action of light and another to the use of soap.

A. G. B.

Thomson (J. Oscar). **Cervical Lympho-Sarcomas: with an Analysis of Ninety Cases.**—*China Med. Jl.* 1923. Dec. Vol. 37. No. 12. pp. 1001–1010. With 7 figs.

In the region of Canton, of 1,253 tumours within the sphere of the author's operations, 30 per cent. were malignant, 34 per cent. of these being sarcomatous, and 90 per cent. of the last-named being cervical lymphosarcomas.

Cervical lymphosarcoma, which commonly occurs in middle-aged males, usually begins in a single one of the deep-seated glands; it rapidly extends to all the glands of the chain, infiltrates, but is usually movable on the deep structures, and finally may become attached to and ulcerate the skin; the glands of the other side of the neck may become involved and metastases occur in the liver. The rapidity of its growth may be realized by the facts that the individual cells cannot be distinguished and that mitotic figures are numerous. There is some anaemia, but no leucocytosis. If untreated it is fatal in two to three years. Radical excision may cure. Ligation of the main artery of supply relieves symptoms temporarily and may render the tumour suitable for operation.

The tumour is of firm consistence, causes pain, and may cause various symptoms of obstruction and pressure. From lymphadenoma it is differentiated by absence of leucocytosis; from Hodgkin's disease by the absence of general enlargement of the lymphatic glands and spleen; from fibroma by pain and more rapid growth.

A. A.

Mouillac. **Note sur une épidémie de scarlatine à Yunnanfou (mars 1921-mai 1922).**—*Bull. Soc. Path. Exot.* 1923. Dec. 12. Vol. 16. No. 10. pp. 760–767.

Lafont (A.). **A propos d'une épidémie de scarlatine à Yunnanfou.**—*Ibid.* pp. 767–770.

Between March, 1921, and May, 1922, a serious epidemic of scarlatina raged in Yunnan and especially at the capital, Yunnanfu. It is stated to have carried off 50,000, children for the most part, of the 200,000 inhabitants of the town. At first regarded as diphtheria it was treated with large doses of antitoxin, the effect of which seems to have been to suppress the rash. The author on his arrival

recognized the disease as scarlatina, and in this diagnosis he was confirmed by LAFONT. Scarlatina had not occurred in Yunnan within the memory of man.

A. G. B.

DAVIES (L. W.). **Two Cases of Scarlatina.**—*Nigeria Ann. Med. & San. Rep. for the Year* 1922. p. 32.

In June a Political Officer at Zaria developed scarlatina, with typical throat and pharynx and tongue signs, enlargement of posterior cervical glands and general rash. The skin desquamated in large flakes. In August, another European Officer at Zaria had a similar attack. The former had received a letter from a schoolmaster in England who had closed his school owing to scarlatina, but had not himself suffered. How the second became infected is quite unknown. The disease is not recognised by the natives.

A. G. B.

SARNELLI (Tommaso). **La malattia del "Lâtah" in Tripolitania.** ["Lâtah" in Tripoli.]—*Giorn. di Med. Milit.* 1924. Feb. 1. Vol. 72. No. 2. pp. 104–106.

The author states that in Tripoli latah subjects exist "in hundreds." He divides the cases into three main groups: Firstly, the "mimetic," whose actions are purely imitative; secondly, the "impulsive," in whom some slight stimulus produces results altogether disproportionate—maniacal speech and actions; thirdly, the "emotive," in whom the sight of a small, harmless animal produces a state of absolute terror. Those affected by the disease are often persons living a quiet life and showing no other indications of mental or nervous instability. Some remain liable to recurrences throughout life; in others the attacks diminish in number and intensity and finally cease altogether.

H. Harold Scott.

VAN LOON (F. H. Gl.). **Lattah, eene psychoneurose der Maleische Rassen.** [Lattah, a Psychoneurosis of the Malay Races.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1924. Vol. 64. No. 1. pp. 59–82. [1 ref.]

Founded upon the results of an enquiry in the Dutch East Indies and on personal observation of four cases, the history of which is quoted, van Loon gives his views of the characteristics and the etiology of this imitative neurosis which is common in Malay races especially in women. He does not agree with KRAEPELIN and JELGERSMA, who consider lattah to be an hysteric symptom. The high emotivity, low degree of "secondary function," and low activity, together with the increased suggestibility of the Malay race are the predisposing factors for this typical fright neurosis. The fright causes loss of control and automatic outbreak of the imitative attitude. Often a frightful dream is the first occasion of its manifestation.

W. J. Bais.

LIGNIÈRES (J.). **Nouvelle contribution à l'étude des champignons produisant les actinomycoses.**—*Ann. Parasit. Humaine et Comparée.* Paris. 1924. Jan. Vol. 2. No. 1. pp. 1–25. [3 refs.]

The object of this memoir is to lay the foundations of a rational classification of the Actinomycetes. The memoir consists largely

of a detailed study, illustrated by 8 coloured plates, of the individual cultural characters of 4 several strains of *Actinomyces bovis* isolated from 4 cases of classical actinomycosis. Then, while emphasizing the ignorance of the manner in which actinomycosis originates as a pathological condition and the impossibility of producing it experimentally, he insists on the identity of *Actinomyces bovis* with the actinomycetes of wide and general occurrence in Nature. Coming finally to the pathological aspect, he distinguishes in morphological, pathological, and cultural detail, three pathogenic genera, namely, *Actinomyces* Harz, 1877, with *Actinomyces bovis* Harz as type species; *Brevistreptothrix*, a new genus, with *Brevistreptothrix israëli* (Kruse, 1896) as type species; and *Actinobacillus* Lignières, Brumpt, with type species *Actinobacillus Lignieresi* Brumpt, 1910.

A. Alcock.

Arnaud (L.). **Première relation d'un cas d'Actinomycose Marocaine.** —*Maroc-Médical.* 1923. June 15. No. 18. pp. 178–181. With 2 figs. [1 ref.]

The first case published from Morocco, at all events since 1910. The subject was a woman of 26 who was born at Algiers, had never left Africa, and had lived at Rabat for four years. A swelling at the angle of the jaw for which local treatment was given spread to the neck. It was incised and there was evacuated a little reddish pus containing small pale grains. Under the microscope the characters were those of actinomycosis. An attempt at cultivation failed. Three weeks' treatment with iodide of potassium sufficed for cure. There is no record of actinomycosis in animals in Morocco except at Tangier, where it is fairly common. From the facts that the grains were small and pale and the lesions were subcutaneous and intramuscular rather than bony the author thinks the organism was Cohnistreptothrix rather than Nocardia.

A. G. B.

Dickson (J. R.); Gideon (C. S.). **Alastrim.**—*British Guiana Med. Annual for 1923.* pp. 11–14; 14–18.

These are papers presented to the West Indian Medical Conference, British Guiana, 1921.

Dr. Dickson (Trinidad) gives a general description of alastrim, remarking, as do all the clinicians, the slightness of the constitutional disturbance in comparison with the extent of the eruption. He finds that recent vaccination protects, but after the lapse of some years does not lead to a modification of the disease as in smallpox. He refers to young persons with large vaccination scars who were almost covered with the alastrim eruption. He thinks that the likeness to smallpox outweighs the differences and that the cases should be labelled and treated as smallpox.

Dr. Gideon (Jamaica) reported 9,000 cases in that island within the space of 6 months. He describes the symptoms with several references to Moody's paper (see this *Bulletin*, Vol. 19, p. 438). The consensus of opinion in Jamaica is that recent vaccination confers absolute protection, but neither here nor in the other islands is there a law enforcing re-vaccination. Though alastrim is mild as regards mortality—there were not more than 13 deaths—the disfigurement produced in some cases has been great.

A. G. B.

CHAUVET (Stéphen). **L'alastrim : une nouvelle fièvre éruptive.**—*Rev. Prat. Malad. des Pays Chauds.* 1923. Dec. Year 2. Vol. 3. No. 4. pp. 298–318. With 3 figs.

Cases of alastrim having appeared at French ports where vessels from the West Indies and South America touch, the author gives a very full account of the disease, its symptomatology, diagnosis, treatment and prophylaxis. Though he advises vaccination, he does not appear to regard it as smallpox.

A. G. B.

MUKERJI (B. K.). **A Case of Alastrim (Kaffir Pox).**—*Indian Med. Gaz.* 1924. Feb. Vol. 59. No. 2. pp. 89–90. With 1 fig.

A case of fever and general discrete seropustular eruption (figured) in a Mahomedan boy at Cawnpore, of which few details are given.

A. G. B.

VOMELA (Stanislav). **Die Lyssa im Lichte der Toxinlehre.** [Rabies in the Light of Toxicology.]—46 pp. 1921. Czecho-Slovakia : Im Selbstverlag, Brünn, Pod Tratî 5.

The long argument here sustained is that rabies and tetanus and botulism form a natural group of cognate diseases of the central nervous system—are three species, so to speak, of one pathological genus—differing, *inter se*, only in their symptomatology, which depends on differences in the chemical composition of their several toxins. The main points of the argument are that all three occur as isolated cases, or small local epidemics ; that mammals are particularly susceptible ; that all are produced by a specific toxin, which is formed at a definite point or in a definite tract and invades the central nervous system by way of the peripheral nerves ; that none of them produces any definite and characteristic pathological lesions, but that all are made manifest by characteristic effects upon the grey matter, preferentially of the motor ganglia, of the nerve centres. Of course, it is recognised that in the case of tetanus and of botulism the toxin is produced by a specific bacillus and that the origin of the virus of rabies is uncertain.

A. A.

REMLINGER (P.). **Différence d'action de la glycérine á l'égard du virus rabique de rue et du virus fixe.**—*C. R. Soc. Biol.* 1923. Dec. 8. Vol. 89. No. 35. pp. 1132–1133.

Recently-dried cords (2 or 3 days) of rabbits dead of fixed virus kept in contact with glycerine for 7 or 8 days lose their virulence (in the case of street virus, in the same circumstances, they do not lose their virulence until 20 or 21 days).

A. A.

METCALFE (A. J.). **The Schick Test at Thursday Island.**—*Med. Jl. Australia.* 1924. Feb. 2. Year 11. Vol. 1. No. 5. pp. 111–112. [7 refs.]

The population of Thursday Island in Torres Straits is about 1,400, including 400 whites. Though there is constant communication

with Australia and with China and Japan, and the records go back to 1883, there are few reports of diphtheria. It was thought probable that all the children were non-immune and that the introduction of a case might lead to grave results. A series of Schick tests, with the parents' permission, was therefore carried out. The results were noted after 24, 48 and 72 hours, 7 and 14 days; a pseudo-reaction which occurred in 15 per cent. is an early phenomenon. Of 156 children of ages 4–15 tested 151 gave the reaction, and 5 did not, a positive percentage of 96·8. It would appear that the number of susceptible children in a community depends to a large extent upon the opportunities they have had to develop immunity.

A. G. B.

Montel (L. R.), Trân Van An & Dang van Cúóng. **Adénopathies iliaques primitives chez des Annamites de Cochinchine. Guérison par le chlorhydrate d'émétine.**—*Bull. Soc. Path. Exot.* 1924. Jan. 9. Vol. 17. No. 1. pp. 67–75. With 3 figs.

In this paper abstracts are given of ten cases, observed among natives of Annam, in which there occurred in the right iliac region a tumour of considerable size, not excruciatingly painful and without concomitant high fever or other symptoms of peritonitis, and therefore not due to appendicitis. In four of the cases there was evidence or a history of dysentery, and in two there was diarrhoea. Of six cases that stayed for treatment all were benefited by emetine, alone or in concurrence with novarsenobenzol; indeed, in two cases the tumour completely disappeared after the third and the fourth injection of emetine (10 cgm.). The authors attribute these tumours to a definite lymphadenitis following typhlo-colitis or recto-colitis of amoebic origin.

[The condition here described may be considered in comparison with the invading hyperplasia of the intestinal submucosa—reminiscent of a neoplasm—described by Chatton (see this *Bulletin*, Vol. 19, p. 27) in the experimental amoebiasis of guineapigs; and more particularly with the tumour in the right iliac fossa described and discussed in its possible association with *Entamoebia histolytica*, by Finochietto and Vaccarezza (*Ibid.*, p. 28).]

A. A.

Stevenel. **Contribution à l'étude des Pyomyosites observées à la Côte d'Ivoire. Action thérapeutique de l'iodure de potassium.**—*Bull. Soc. Path. Exot.* 1923. Dec. 12. Vol. 16. No. 10. pp. 710–712.

Pyomyositis is fairly common at Bouaké. Cases were seen from the end of February till August, a little after the beginning of the rainy season. The muscle abscesses are sometimes multiple and often develop without constitutional disturbance, frequently without fever and with no tendency to open on the skin surface. Sloughing and purulent infiltration are not uncommon. They tend to appear in succession in various parts of the body. When pus is let out it is greyish, viscous and mixed with blood. Microscopical examination shows it to contain isolated clumps of motionless micrococci of sizes varying in the same clump from less than half to more than a micron, and staining irregularly. Haricot forms are seen, in pairs or tetrads.

A thick and irregular capsule is generally to be made out. The organism grows well on all the ordinary media. The micrococcus is classed in the Tetragenus group with the peculiarity that it grows best about 28° C. on media containing glucose and begins to clot milk in fine coagula after 5 days at the same temperature. Broth becomes clouded uniformly. Gelatine is not liquefied and stale cultures give a series of colonies equally dense in the depth and towards the surface. A guineapig inoculated from a culture showed swelling of the neighbouring muscles after 3 days, and on the 5th day fluctuation and on the 9th an abscess burst with thick viscous pus, containing cocci in tetrads with an irregular capsule. On the 12th the animal had recovered. A case in a European is recorded in which fluid withdrawn by a syringe before fluctuation contained similar organisms. The effect on the patient of pot. iod. in increasing doses up to 12 gm. daily is astonishing. Small abscesses dry up and larger ones heal if punctured with a trocar.

A. G. B.

BRAHMACHARI (Bepin Behari). **Epidemic Dropsy, is it not an Infection?** —*Calcutta Med. Jl.* 1923. Dec. Vol. 18. No. 6. pp. 519–533. With 2 maps & 1 chart.

Two epidemics were studied, at Krishnagar in 1919–20 and in villages of the Khulna and Jessore districts in 1922. Of 127 Krishnagar cases all suffered from anaemia, oedema and weakness, 29 had in addition diarrhoea, 28 diarrhoea and fever, and 40 had nervous symptoms consisting chiefly in burning sensations in the soles and palms; in 68 per cent. therefore there was no implication of the nerves. 70 per cent. in all had pronounced gastro-intestinal symptoms; 39 per cent. fever, as a rule ranging between 99° and 101° F.; oedema, an invariable symptom, was limited as a rule to feet and legs. There were 4 deaths. Whereas in the Calcutta epidemic GREIG found the disease limited to the small clerk class with fixed incomes, at Krishnagar it affected "the élite and the rich" besides the jail, college hostel and school. Much of the paper is given to a discussion of malnutrition, food poisoning and infection as possible causes. Defective diet is ruled out. Mineral oil as an adulteration of mustard oil and a toxamine in rice are considered, but the author evidently leans to infection and gives some suggestive accounts of the spread of the disease from house to house.

A. G. B.

PONS (R.). **i. Organisme spiralé mobile isolé en hémoculture au cours d'une fièvre à caractère récurrent.**—*C. R. Soc. Biol.* 1923. Nov. 24. Vol. 89. No. 33. pp. 1028–1030.

——. **ii Sur la nature d'un germe spiralé isolé en hémoculture au cours d'une maladie fébrile à caractère récurrent.**—*Ibid.* 1924. Feb. 22. Vol. 90. No. 6. pp. 396–398.

i. From Saigon. The patient, a male of 22 years, had travelled in Egypt and China. The clinical symptoms resembled those of relapsing fever; recovery occurred after one relapse. Organisms appeared in blood cultures on the 14th day. They appeared under three forms: (*a*) vibrioids 3–8 μ long and 0·3–1 μ broad, with 2 or 3 loose spirals and

very mobile; (*b*) spirillar forms 15–25 μ long, with 4–6 sharper spirals and progressive undulatory movement; (*c*) elongate forms of 100 μ, showing the ordinary non-progressive undulations. In eight-day old cultures stained by Tribondeau's method certain individuals displayed a granule, or granules, of diameter apparently greater than the organism itself, and more basophilic; and also free spherical bodies of 1–3 μ diameter were seen, singly or in small groups. Cultures in NNN medium lived 15 to 20 days, at 37° C. The organism multiplies by binary or multiple transverse fission, and grows under ordinary conditions as well as anaerobically.

ii. In preparations it has the classical spirochaete form, but shows in culture every gradation from a short non-flagellate rod, through a vibrion form, to a short spiral-form. Though it has rapid movements both of undulation and locomotion the body appears rigid. For culture blood-albumins are necessary, the optimum temperature is 28° C., and anaeroby is favourable but not essential; cultures have no odour. In old cultures coccoid bodies both internal and free may be seen. Spiral forms may be grown in subcultures of cultures from which spiral forms have long disappeared. Experimentally this microbe is very infective and pathogenic to guineapig, rabbit, and monkey. Inoculated by any route the blood becomes infective from the 2nd day and gives positive blood-cultures in 3–4 weeks. Fever, which starts on the 2nd or 3rd day, is the most constant symptom, and is recurrent if the illness is prolonged. In the rabbit subcutaneous inoculation has caused a destructive irido-choroiditis, and intra-testicular inoculation a voluminous orchitis. In the guineapig, infection is often fatal on the 3rd–10th day, and the visceral lesions consist of slight sanguineous effusions and sometimes slight enlargement of the axillar and inguinal glands. Some of the animals recovered from the infection appear to be immune. Novarsenobenzol has a remarkably specific action both therapeutically and on cultures; a dose of 0·01 gm. per kilo of bodyweight sterilizes the blood of an animal in 48 hours; in cultures growth is stopped by dilutions of 1 in 250,000.

A. A.

Phipson (E. S.). **Observations on an Outbreak of Typhus in Simla with Special Reference to the Weil-Felix Reaction.**—*Indian Jl. Med. Res.* 1923. July. Vol. 11. No. 1. pp. 305–318. With 3 charts. [10 refs.]

——. **A Note on the Serological Diagnosis of Typhus by the Weil-Felix Reaction.**—*Indian Med. Gaz.* 1924. Jan. Vol. 59. No. 1. pp. 7–11. With 6 charts.

The summary and conclusions give an adequate account of this paper:—

"(1) The Simla outbreak consisted of 16 cases (8 males and 8 females) restricted to a single Mohammedan family and attended with a case mortality of 37·5 per cent.

"(2) The origin of the outbreak is not certainly known, but the available evidence points to the virus having been introduced by a healthy third party from a focus of infection 25 miles away, the medium of transmission being, presumably, infected lice.

"(3) The existence of the epidemic was not recognised until several deaths had occurred, and the clue to its existence was afforded by the application of the Weil-Felix reaction to the sera of two *recovered* cases.

"(4) The sera of 12 cases known or suspected to be suffering or to have suffered from Typhus were tested for agglutination by Garrow's method against *B. proteus* × 19 in every case with a positive result, varying according to the stage of the disease from 1 : 16 to 1 : 2048, with one exception, an almost moribund case, which was only tested once and reacted in no higher dilution that 1 : 4.

"(5) The sera from 100 healthy subjects, chiefly Indians specially selected as likely to provide the most exacting controls, were tested for agglutination against *B. proteus* × 19 with the result that all failed to show the least trace of agglutination in a dilution of 1 : 16; 8 per cent. gave a feeble reaction in 1 : 8, 33 per cent. reacted in 1 : 4, and 59 per cent. failed to react in 1 : 4.

"Conclusions.—(1) The Weil-Felix reaction in Indians is of value—

"(*a*) in confirming a diagnosis arrived at by clinical observation;

"(*b*) in establishing a diagnosis in atypical cases in which the clinical evidence of typhus is doubtful;

"(*c*) in arriving at a retrospective diagnosis in cases which have recovered, provided the interval since recovery is not too great.

"(2) There are some grounds for the belief that the Weil-Felix reaction may prove to possess, as far as Indians are concerned, a more nearly specific character than has hitherto been assigned to it, with correspondingly enhanced value as a diagnostic method."

The agglutinating organism was received from Dr. MANSON-BAHR and came from the Civil Laboratory at Jerusalem. Charts show the type of the fever and demonstrate the high frequency of the pulse. The rash was made out in 6 cases carefully observed, it was best seen as discrete macules on the inner sides of the arms and was well displayed by the application of oil to the skin surface.

A. G. B.

SMITS (J. C. J. C.). **Miltabscessen.** [Abscesses of the Spleen.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1923. Vol. 63. No. 5. pp. 685–708.

A full account of the pathologic, clinical and surgical aspects of splenic abscess, 6 cases of which disease are quoted. The causes were respectively: endocarditis, typhoid fever, puerperal and other sepsis, perinephritis, and amoebiasis. Complicating purulent pleurisy was common and as a rule does not render the prognosis of the case worse. Primary abscess of the spleen is considered to be very rare if it exists at all. Surgical treatment is discussed in detail.

W. J. Bais.

MANSON-BAHR (Philip) & GILL (G. Brittan). **On a Case of Lymphadenoma with Relapsing Pyrexia of Tropical Origin (the Pel-Ebstein Syndrome).**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923. Oct. 18. Vol. 17. No. 4. pp. 246–254. With 1 chart & 1 fig. [11 refs.]

The case described is one of lymphadenoma with recurrent pyrexia without enlargement of the superficial glands, and it is of interest to tropical workers because it began when the subject, a man of 26, was in Egypt. In 1912 only eight such cases had been recorded. The whole course of the disease in this case was 2¼ years. The chart suggests a spirochaetal infection; periods of pyrexia lasting 7-8 days are separated by rather longer intervals in which the temperature is subnormal. In an attack observed at Leicester there was painful enlargement of the spleen, adenitis of the glands of the groins and a

leucocytosis of 12,600; jaundice also is observed. The blood, repeatedly examined, never showed any characteristic change; blood cultures and animal inoculation were negative. Death took place at the end of a pyrexial attack in the Tropical Diseases Hospital. Postmortem the liver and spleen were enlarged, the spleen mottled by tiny pale infarcts resembling multiple tubercular deposits. The mediastinal and other internal glands were swollen to the size of a walnut. The difficulty of diagnosis is obvious. Apart from the absence of parasites the intervals between the attacks are longer than is usually the case in other forms of relapsing fever.

A. G. B.

Clarke (J. Tertius). **The Treatment of Erythro-Melalgia Tropica by Injections of Antimony.**—*Jl. Trop. Med. & Hyg.* 1923. Sept. 15. Vol. 26. No. 18. pp. 285–286.

Among the South Indian agricultural labourers in the Malay Peninsula, not among the Chinese or Malays, is seen an affection called "burning pain in the feet," of which the author has seen 30 cases in 18 months. The patient walks on his heels and the outer side of the feet. The pain is severe, mostly in the sole, and prevents sleep. It lasts 3–4 months or even a year; it is always symmetrical. Examination reveals nothing. The author looks upon it as a manifestation of ankylostomiasis [but does not say whether and to what extent his patients were infested]. He injects into the gluteus one grain of tartar emetic in 20 minims of water once a week and has thus cured most of his cases. A smaller dose was ineffectual or was followed by relapse.

A. G. B.

Monserrat (Carlos). [In English & Spanish.] **Bacteriological and Pathological Study of a Case of Anthrax Septicemia with Gastro-Intestinal Lesions. Estudio bacteriologico y anatomo-patologico sobre un caso de septicemia producido por el bacilo del antrax con lesiones en el estomago y en el intestino.**—*Jl. Philippine Islands Med. Assoc.* 1923. July-Aug. Vol. 3. No. 4. In English pp. 193–198. With 6 figs. [8 refs.] In Spanish pp. 220–224.

In this case, believed to be the first reported from man in the Philippines, the disease was acquired through the digestive tract. After a few days of fever, profuse nasal discharge, and later, prostration, the patient, a Filipino, was admitted to hospital where he died shortly, without gastro-intestinal symptoms, his case undiagnosed. Besides other lesions, nodules, in some cases ulcerated, were found in the small intestine and anthrax bacilli were isolated from the blood. The post-mortem appearances, microscopic and naked-eye, are described in some detail.

A. G. B.

Maxwell (J. Preston). **Osteomalacia in China.**—*China Med. Jl.* 1923. Aug. Vol. 37. No. 8. pp. 625–642. With a map & 14 figs. [17 refs.]

Osteomalacia occurs in China in several high-lying areas north of the Yellow River, including the whole of Manchuria, where, however,

the type is mild. At Ping-ting-chow in Shansi, with a population of 15,000, it is believed that one in fifty of women at the child-bearing period has the disease and in Shensi one to five per cent. of such women are affected. The only known focus south of the Yellow River is near Changsha in Hunan, where the trouble is chest deformity. The disease is known as " Yao t'ui t'eng " or " back and thigh pain." The bones affected are the pelvic, thoracic and long bones, sometimes one group, sometimes another and there are characteristic deformities, those of the pelvis disabling the patient from normal child-bearing and from marital relations. The muscles become weak and tetany is common. The disease begins with puberty or with pregnancy or with lactation ; in each instance the calcium balance is upset. The etiology is discussed but is not elucidated. Diet and environment may play a part. It is the middle classes, rather than the poor or the rich, who are affected, suggesting that confinement to the house with an inadequate diet disposes to the disease. The author believes that if the standard of living as regards food and exercise could be raised the disease would disappear. A similar condition has been seen in goats. [See also this *Bulletin*, Vol. 18, p. 298.]

A. G. B.

VAMPRÉ (Enjolras). **Terceira contribuição ao estudo do " mal de engasgo."**—*Brazil Medico.* 1923. Sept. 1 & 8. Year 37. Vol. 2. Nos. 9 & 10. pp. 137–144. With 4 figs. ; 158–166.

"Mal de engasgo" or the "choking disease" is a peculiar condition occurring chiefly in males between the ages of 20 and 30 years, affecting at times several members of a family, making its first appearance suddenly, perhaps after exertion, and showing intermissions of varied duration from a few hours to months and even years. Among the names by which it has been described are : spasmodic dysphagia, oesophagismus, cardio-spasm. During the attack vomiting, or, more correctly, regurgitation, is frequent ; there is no pain, but a sense of suffocation which is only relieved by inducing regurgitation of food. As a result of the malnutrition wasting may be extreme.

The case is recorded of a man, 62 years of age, who had suffered intermittently from this condition for 10 years. Operative measures were decided upon. On opening the abdomen a narrowing of the oesophagus was seen over 4–5 cm. of its length starting 2 cm. above the opening into the stomach. The oesophagus was dilated above the stricture. Operation consisted of dividing the circular muscle fibres down to the mucosa ; no sutures were used. For three days no food was allowed by mouth, then warm fluids were given and the food gradually increased until, 15 days after the operation, the patient was taking mingao (a sort of paste made of flour of Mandioca, sugar and eggs), soups, milk, fruit, etc. Relief was immediate and there has been no recurrence [unfortunately no dates are mentioned].

The second part of the paper consists of an historical résumé of the various theories which have been advanced from time to time to explain this condition, notably the following : (*a*) Primary cardio-spasm (MELTZER & MIKULICZ), (*b*) Primary atony of oesophagus (ROSENHEIM), (*c*) Congenital predisposition (FLENIER, ZENKER & SIEVERS), (*d*) Torsion of the oesophageal opening, (*e*) Constriction secondary to ulcer of stomach or oesophagus, simple or malignant. The author, however, believes that the dilatation is a mechanical

secondary effect of the constriction which is itself due to oesophageal contracture of parasitic origin. He adduces for this the peculiar distribution of the disease in Brazil, its epidemic character, and the presence in each case of an enlarged spleen. [The last is not a point of much weight, since, he states, in an experience of 40 years he has never met with a case which had not previously suffered from ague.]

For earlier accounts of mal de engasgo see this *Bulletin*, Vol. 2, p. 109; Vol. 18, p. 301.

H. Harold Scott.

Calbairac. **Essai de vaccinations antiméningococciques sur un contingent annamite.**—*Bull. Soc. Path. Exot.* 1923. Dec. 12. Vol. 16. No. 10. pp. 712–715.

Lafont (A.). **A propos d'un essai de vaccination antiméningococcique au Tonkin.**—*Ibid.* pp. 715–717.

In consequence of an epidemic of cerebrospinal meningitis in a garrison town in French Indo-China which had killed 13 out of 18 Annamites attacked, the rest were inoculated with vaccine from Saigon and Haiphong. In a preliminary test 20 men from an unaffected unit and 30 from an affected were inoculated, after in the second case a previous injection of 3 cc. of antimeningococcic serum. Both groups received 1 cc. of vaccine and 5–6 days later 2 cc. No reaction occurred, and the rest were then treated with the double dose of vaccine, which contained a milliard of germs to the cc. Six had reactions, in only one case fatal. There were no more cases of meningitis. Five severe cases of the disease were treated with vaccine with recovery in three.

Lafont says that the object was to immunize these men rapidly because they had to proceed to France. Among 250 who did so proceed there was no case during the 30 days of passage. He thinks that three of Calbairac's six cases were incubating the disease at the time of vaccination; they were treated with antimeningococcic serum and recovered. He concludes that prophylactic inoculation should be put in practice. As to the cases treated he reserves his opinion, but he remarks that often in bacterial diseases when serum fails an autovaccine, or even a stock vaccine, may lead to remarkable recovery, even when the patient's life was despaired of.

A. G. B.

Lalung-Bonnaire & Pons (R.). **Encéphalite léthargique en Cochinchine.**—*Bull. Soc. Path. Exot.* 1923. June 13. Vol. 16. No. 6. pp. 399–403.

Between November 1922 and February 1923 the authors have seen at Cholon, Cochinchina, 5 cases of lethargic encephalitis which they have studied at the Saigon Pasteur Institute. A short account of each is given and of experiments on rabbits. Starting from an emulsion of brain it was found possible to infect this animal, in the proportion of 1 in 3, with an affection, both general and local, which could be transmitted in passage and had the character of experimental encephalitis. The duration of the infection in the course of passage came down to a minimum of 6 days, which may prove to be the result of fixation of the virus.

A. G. B.

FRANCIS (Edward). **Tularaemia. IX. Tularaemia in the Washington (D.C.) Market. X. The Amino-Acid Cystine in the Cultivation of** *Bacterium tularense*.—*Public Health Rep.* 1923. June 22. Vol. 38. No. 25. pp. 1391–1404. [6 refs.]

IX. Some interesting facts relative to the spread of tularaemia are here recorded. Infected rabbits are sold in the market places, which may be far distant from the original source of infection, and retail sellers and buyers as well as cooks, etc., are known to have acquired the disease in this way. The distribution of the disease may thus be studied by a survey of markets, and the best months are November, December and January, when the game laws are in abeyance and the supply of rabbits is particularly plentiful. The disease is now known to extend right across America, from California to North Carolina and Washington.

X. Cystine and cysteine hydrochloride are the only two of the numerous chemicals studied by the author that render fresh beef-infusion peptone-agar favourable for the prolonged cultivation of *Bacterium tularense*. Media containing yolk of egg, or rabbit blood, or fresh spleen of rabbit or guineapig are favourable for the cultivation of *B. tularense*. The three media of the author's election for all laboratory and serological work connected with the isolation and cultivation of the organism are the following :—

" 1. *Serum glucose cystine agar*.—Fresh beef infusion agar, containing 1 per cent. peptone, 1 per cent. agar, and 0·5 per cent. sodium chloride, adjusted to a reaction having a pH of 7·3, is kept on hand in stock. When needed, there is added to the stock agar 0·1 per cent. of cystine and 1 per cent. glucose, and this is heated in the water-bath sufficiently long to melt the agar and to sterilize the cystine and glucose, after which it is cooled to 50° C., when 5 per cent. horse serum is added. The medium is then tubed, slanted, and incubated 24 hours to insure sterility.

" 2. *Serum glucose cysteine hydrochloride agar*.—This is the same as (1) except that cysteine hydrochloride is substituted for cystine.

" 3. *Glucose cysteine hydrochloride agar*.—This is the same as (2) except that no serum is added.

" In medium (1) the pH of 7·3 is unchanged by the addition of cystine, while in mediums (2) and (3) the pH of 7·3 is changed to 6·8 by the addition of cysteine hydrochloride. *Bacterium tularense* grows equally well throughout the range from 7·3 to 6·8."

A. A.

CLARK (Herbert C.). **Sinusitis, Otitis Media and Mastoiditis—the Incidence at Autopsy in the Panama Canal Zone.**—*Proc. Med. Assoc. Isthm. Canal Zone.* 1920. Jan.-Dec. Vol. 13. Pts. 1 & 2. pp. 66–74.

The author analyses 3,376 autopsies in which he has opened and inspected the accessory divisions of the head through the floor of the anterior and middle fossae of the skull and presents the results in a series of nine tables with a commentary. He points out that the population of the Panama Canal Zone is very largely formed of young male West Indian negroes and men of mixed race from Latin America. The figures show that otitis media and mastoiditis was found in 6·7 per cent., sinusitis (children included) in 7·37 per cent., and that 12·33 per cent. showed more than one of these lesions. Whereas sinusitis was most common in the 3rd decade, the chief incidence of otitis media and mastoiditis was in the first 3 years. The incidence in whites

was 6 per cent., in negroes 11·37, and in Latin-American mestizos 22·5 per cent. These last are very susceptible to respiratory diseases and their sequelae. 413 cases in all had a suppurative lesion in some one or more of the accessory cavities of the skull and in 51 the three conditions coexisted. A chart giving the diseases associated with the lesions shows that all the 24 influenza cases were affected, 22·5 per cent. of the pneumonias and 5·4 per cent. of the lung tuberculosis cases. Cases of sudden death (189) showed these lesions in 3·17 per cent., which must be the average for the general population. Among the numerous details in a closely packed paper one more may be selected for mention. Among the 413 cases with suppurative sinusitis and otitis media there were but 24 cases recognised by the physician.

A. G. B.

BESREDKA (A.). **Local Immunity in Infectious Diseases.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923, Dec. 13, & 1924, Jan. 17. Vol. 17. Nos. 6 & 7. pp. 346–356. (Discussion 356–368.)

The theme of this interesting discourse is that where certain tissues are peculiarly susceptible to certain bacteria corresponding immunities can be directly acquired by such tissues irrespective of any leucocyte defence, the main argument being supplied by a consideration of the process of directly immunizing the gastro-intestinal tract by vaccines directly applied by ingestion *per os*.

The novel idea of a local tissue-immunity is in the author's opinion realized in his recent studies of anthrax in the guineapig. It was long believed that this animal was so exceedingly sensitive to the anthrax bacillus as to be intractable to vaccination by any of the usual methods even with the most attenuated virus. The author, however, has observed, on the one hand, that if in the process of inoculation the skin of the animal be scrupulously respected the virus may be injected into almost any other situation with impunity to the animal, and, on the other hand, that if the vaccine (or virus) be applied to the skin direct the animal can be immunized to overwhelmingly lethal doses, and this without the necessary appearance of any antibodies. (A similar pure "skin" immunity to staphylococcus and to streptococcus also can be produced in guineapigs within 24 hours and without the intervention of antibodies, by applying a dressing soaked in a vaccine or in the filtrate of an old culture of these bacteria to the animal's abdomen.)

Being satisfied, therefore, that in the case of the guineapig and anthrax the susceptibility and the defensive reaction to infection are properties of a particular tissue—the skin, the author translated his observations to the intestinal tract and there discovered instances of the same phenomenon in dysentery, enteric, and cholera. Experiments with rabbits impressed him with the special affinity of these pathogenic bacteria for the intestinal wall; wheresoever into the body they are injected, the only part that reacts to them is the intestine, and there they often appear in a pure culture. Such being the selective sphere of action of the bacilli, is it also the elective site for vaccination (*per os*)? In the case of dysentery, experiments upon rabbits (and mice) are said by the author to be convincingly affirmative; ingestion of heated cultures imparts solid immunity, and this has been corroborated for man by NICOLLE (this *Bulletin*, Vol. 20, p. 115) and also by

some field experiments here recorded :—In an epidemic (Shiga) at Versailles 546 out of 1,616 soldiers were vaccinated by mouth ; of the 546 forty-two (7·69 per cent.) developed dysentery during 16 days following ingestion ; of the 1,070 not vaccinated 287 (28·6 per cent.) contracted dysentery, with 5 deaths. At Petrograd 1,000 out of 2,768 persons ingested vaccine in an epidemic that continued for a month afterwards ; among the 1,000 there were 9 cases of dysentery, 6 of which may be excluded as having occurred almost immediately after the vaccination ; among the 1,768 not vaccinated there were 56 cases.

In dealing with typhoid and cholera (where the endotoxins are much less active than in dysentery) experiments on rabbits are at first obstructed by the fact that the normal intestine of this animal is indifferent to these bacilli when ingested. If, however, the intestine be cleaned by a preliminary purgation with oxbile it becomes remarkably sensitive (in the same way that the scarified skin of the guineapig is sensitive to anthrax) and equally receptive—independently of the production of antibodies—to an immunizing vaccine. Mouth vaccination against typhoid has produced some arresting results in man also (see this *Bulletin*).

Having satisfied himself by experiment that susceptibility and acquisition of immunity to dysentery and typhoid and cholera come within the same generalization as susceptibility and acquisition of immunity (of the guineapig) to anthrax, the author inquires further whether this direct immunization of a specifically receptive tissue is essentially different from immunization imparted by the indirect subcutaneous route. Taking cholera as the example, he opposes the statement that the establishment of immunity is effected differently, by antibodies. That statement has been held to be conclusively proved by the fact that after subcutaneous vaccination immunity is not established for 5 or 6 days, and that its establishment synchronizes with the appearance of antibodies in the blood. The author, however, regards this synchrony as a mere coincidence, since in the guineapig immunity can be produced within 24 hours by subcutaneous or intravenous injection of the filtrate of a broth culture of cholera vibrios which has been incubated at bloodheat for 10 to 20 days—even if it be heated to 100°–120° C. ; the immunity in this experiment must be something independent of leucocytes.

Finally the author discusses the mechanism of immunity without intervention of antibodies, but produces merely the verbal explanation —not up to the level of the rest of the discourse—that it appears to depend upon "the desensitization of the receptive cells."

In the discussion of the paper Dr. LEDINGHAM impugned the originality of Besredka's observations on the guineapig ; stated that anthrax bacilli injected under the skin of a susceptible animal without contamination of the skin were destroyed by phagocytes and perhaps by anthracidal bodies in the plasma ; quoted HOLMAN and FERNISH to the effect that guineapigs infected with anthrax by scarification succumbed without any trace of reaction locally, and when merely exposed (with a scarified skin) to anthrax-contaminated material showed no susceptibility to infection at all ; referred to experiments by ZINGHER and SOLETSKY in which attempts to produce immunity to paratyphoid by mouth vaccination were a complete failure, and also to experiments with mouth administration of Shiga vaccine by KANAI, in which a very low form of immunity was demonstrated and agglutinins were observed ; and also referred to experiments by himself and others demonstrating an immediate (though transitory) increase of opsonic power in guineapigs receiving injections of autolysed staphylococcus cultures and such substances as nuclein. LEDINGHAM also depreciated the field statistics.

To Ledingham's objection Dr. Plotz, who delivered Besredka's paper, replied that he imagined Besredka's positive proof that the skin was the organ exclusively susceptible to anthrax invasion in guineapigs was original both in itself and in its present implications; that anthrax bacilli injected under the sequestered integuments of a susceptible animal remained alive for some hours, and that anthracidal serum and anthrax resistance were not convertible propositions; that direct skin infection in guineapigs produced an extensive local reaction; and that the failure of Zingher and Soletsky was probably due to technique, and the imperfection of Kanai's results inexplicable in the teeth of those of Nicolle.

Colonel Harvey also criticized the statistics. He mentioned as a significant contribution to the general line of argument that Firth long ago noticed that dysentery bacilli can be neutralized by emulsion with intestinal tissue of rabbit, but not with brain, spleen, liver, or muscle.

Dr. Teale had followed Besredka's indications but had failed to infect the intestine. In his experience "the mucosa of the whole length of the alimentary canal is a large excretory organ" from which bacteria inoculated anywhere in the body are excreted. He doubts that infection of an animal can be produced by oral administration of bacteria unless huge amounts are given, and even then the route of infection would be through the bucco-pharyngeal mucosa into the neighbouring glands. [This proposition, so strangely inconsistent with sanitary doctrine and with some of the principal items of sanitary administration, is, no doubt, meant to be taken with qualifications not then precisely expressed.] He had also been unable to prevent the infection of animals into which anthrax bacilli had been injected with special consideration for the integrity of the skin. To these objections Dr. Plotz replied in the sense that they did not accord with Besredka's and his own experience.

Plotz finally contributed an independent epilogue on the relation of antibodies to immunity:—

Antibodies can be demonstrated in the serum of guineapigs and rabbits after intraperitoneal or intravenous or subcutaneous inoculation with large doses of killed anthrax bacilli, yet the inoculated animals cannot resist even a minimal lethal dose of virus; if living cultures in large doses be injected intraperitoneally or subcutaneously antibodies may be developed, but there is no immunity; immunity to anthrax in experimental animals can be brought about only by immunizing the skin, and it may be of a very high degree and without attendant antibodies in the serum. Furthermore, as is shown in particular detail in a table, bile-sensitized rabbits fed on typhoid bacilli may develop a high agglutinin content without immunity, or, conversely, a high degree of immunity without agglutinins.

A. A.

Pope (William J.). **Synthetic Therapeutic Agents.**—*Brit. Med. Jl.* 1924. Mar. 8. pp. 413–414.

The routine of the quest for synthetic therapeutic agents is now well understood; its methods are exemplified and justified in the discovery of the organic compounds of the heavier metals so useful in the treatment of trypanosomiasis, spirochaetosis, and other protozoal diseases. The element that in its simpler combinations is known to be therapeutically active being selected, the organic chemists prepare an extensive series of closely related organic compounds of that element, the effects of these organic compounds upon living organisms and physiological fluids are then individually investigated in the pharmacological laboratory, and such of them as show safe promise are then tested by the clinicians. This method of close

collaboration of organic chemist, pharmacologist, and clinician is the method now pursued, in a spirit in which "little of the altruism of pure science is discernible," in Germany. In England anything like this co-operative method does not exist. We have competent chemists who, it is safe to assert, would very soon produce—as the French chemists are said to have already done—a substance identical with "Bayer 205" in physical and trypanocidal properties, or perhaps something therapeutically better, if only they could work in continuous collaboration with some such body as the Medical Research Council. Or, an Advisory Committee, including representatives of all the necessary interests, might be formed, whose business would be to draw up select plans of work embracing the preparation of long series of organic compounds, and the pharmacological and clinical investigation of such of them as gave promise of useful therapeutic application; the first item of the programme would necessitate the employment of a number of chemists under the direction of the Committee, but the expense incurred would be amply repaid by the results obtained.

A. A.

Ross (Ronald). **The Management of Medical Research.**—*Jl. Trop. Med. & Hyg.* 1924. Jan. 1. Vol. 27. No. 1. pp. 1–6.

In his stimulating, if discursive, treatment of this subject Sir Ronald Ross deals not with any technical detail of administration and manipulation, but with the conduct of medical research as a matter of public policy and principle. Is research in medicine to be, as the idealists importune, a distinct craft and livelihood, with its own appointed apparatus and livery and indentures, broad-based upon the public purse? Or is it to be left—where the Muse of History seems to have left it—to the supreme voluntary individual based on nothing more than his gifts of nature and good fortune? This is the controversy between what Sir Ronald Ross, in stock-exchange metaphor, styles "bulls" and "bears."

Sir Ronald Ross—like Sir Roger de Coverley in another controversy—concludes that there is much to be said on both sides. He sees that a body of paid and well-equipped investigators will at any rate collect and classify an extensive mass of observation and fact; therefore he does "not agree with the party of the 'bears' when they deprecate subsidized investigations carried on by full-time workers under managing committees." On the other hand, he very fully appreciates the argument that many of the farthest-reaching discoveries in medicine have been made by men whose only support was by the practice of their profession and whose only laboratories were their wards and consulting-rooms; some of them suffered pecuniary damage by their devotion to science; "therefore the whole field of public support for science should be broadened so as to include such men," and "we should pay not only for expectations but for results."

A. A.

Valderrana (Pinto). **La Colombie.**—*Presse Méd.* 1924. Mar. 19. Vol. 32. No. 23. (Supplément.) pp. 469–477. With 11 figs.

The prologue tells of the superlative natural resources of Colombia—its exuberant soil, its mineral wealth, and its wonderful flora, and of the range and diversity of its climates, from the torrid riverine plains and valleys, through ascending temperate regions, to the cool and even

frigid heights of the magnificent Cordilleras. The torrid zone (up to about 2,000 feet) includes much impenetrable jungle, but here are also found cinchona, ipecacuanha, sarsaparilla, vanilla, tolu, and rubber, and, under cultivation, rice, sugar, cotton, and tobacco ; its population is an intermixture of coloured races with a considerable leaven of the Caucasian. In the temperate zones (about 2,000 to about 6,500 feet) besides the giant forest primeval with its marvellous orchids and lianas there are large tracts under coffee cultivation, and delicious fruits are grown ; the population here is mainly of white extraction, with an aboriginal residue. The cool or subfrigid zone (above 6,500 feet) is described as a region of perpetual springtime, where the cereals and other agricultural productions of Europe flourish ; it is inhabited mainly—in some parts exclusively—by people of European stock. The diseases of the temperate and the zone above it are very much the same as those of France, except that epidemics of pneumonia occur in the more elevated parts and amoebic dysentery and malaria come up from the valleys below. In these zones the eruptive fevers are more benign and less liable to complications than in France ; tuberculosis was formerly unknown, but has been introduced by invalid visitants to this delightful climate ; syphilis is wide spread, cancer is rare ; *chichismo* is a chronic polyneuritis and idiocy caused by addiction to *chicha*, a drink made from fermented maize—it occurs chiefly among the lower classes. In the torrid zone of the riverine plains and valleys amoebiasis, ankylostomiasis, leishmaniasis, spirochaetosis, and all forms of malaria are prevalent and leprosy exists, the number of lepers being estimated at about 6,000, the population of the republic being seven millions. In respect of sanitation Colombia is making progress. A hookworm campaign is being carried on under Rockefeller auspices ; itinerant sanitary commissioners treat malaria and organize arrangements for the control of mosquitoes ; there are antivenereal dispensaries on French models ; there are 3 lazarets, on the agricultural colony system, for lepers, for whom notification and isolation are obligatory ; and there is a central laboratory of hygiene, where the scope and routine are those of Western Europe. There are in the country 3 schools of medicine, and the history of the principal one, at Bogota, is given in some detail. It began as a private enterprise in 1864, and in 1867, when a national University was established, it was incorporated therein as the Faculty of Medicine. Its curriculum is a very full one and extends over six academic years of nine months. Entrants must be graduates in the humanities and must have passed in English and French.

A. A.

JOHNSTONE (F. J. Carlyle). **The Biology and Pathology of the Natives of the Central Kavirondo District, Kenya Colony.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923. Dec. 13. & 1924. Jan. 17. Vol. 17. Nos. 6 & 7. pp. 369–377.

This interesting enquiry, somewhat new in British tropical possessions, was made in 1922 and chiefly amongst the Nilotic Kavirondo. The author was stimulated thereto by a review of an article by KÜLZ (this *Bulletin*, Vol. 17, p. 207). To arrive at the biological figures each woman was questioned as to the number and sex of her children, the numbers living and dead, the age at death, and as to still-births and abortions. The reproductive period was taken as from 15 to 40. The methods of calculating fertility are explained and the results

shown in a table. 2,591 married women were examined, of estimated mean age 25·7 years. The barren women (married 5 years and without children) numbered 17, or 0·7 per cent., a low figure. The estimated number of children during the child bearing period was 6, and a direct enquiry to 193 women over 40 gave a slightly larger figure, 7·4, twice that of England. The proportion of live births to still-births and abortions was 100 : 7. Of the 7,843 children the total deaths up to 16 were 4,472, or 57 per cent. 72 per cent. of the deaths occurred in the first year, giving an infantile mortality rate of about 400. Male to female births were 104·8 : 100. The pathological statistics are summed up in the table. The high splenic index in children is attributed to malaria. The "deformities of the feet" refer chiefly to losses of toes from jiggers, and cause little disability. The author suggests that some of the cases diagnosed syphilis should be classed under yaws. The natives assert that yaws is acquired in sexual intercourse and causes abortion [but the abortion rate is by no means high]. It is noted that the causative agent of "scabies" has never been isolated; it yields to sulphur treatment.

Pathological Statistics, Central Kavirondo.

	Under 16.	*Over* 16.
Total examined	3,280 ..	4,787
Enlarged spleens	14·6 per cent.	1·4 per cent.
Ulcers	2·3 ..	1·3
Deformities of feet	0·2 ..	3·4
Yaws	4·2 ..	3·2
Diseases of eye	1·3 ..	3·0
Umbilical hernia	1·9 ..	0·1
Scabies	5·4 ..	0·3
Small-pox scars	0·4 ..	3·2
Syphilis	0 ..	1·1
Leprosy	0 ..	0·1
Other causes	0 ..	1·3

The chief causes of death he estimates to be, pneumonia, enteritis, especially in childhood, malaria, plague, small-pox, yaws, dysentery, starvation in famines. The popular belief that the native in his natural surroundings is healthy and vigorous is incorrect. One has actually to visit them in their own villages and live among them to realise the amount of ill-health from which they suffer. The well-known insanitary conditions are then described, and it is questioned "whether curative treatment for any specific disease is not largely a waste of time and money when the patient has afterwards to return to his own surroundings." This problem is discussed with the conclusion that what is required is a sound system of education and an increase in prosperity. An object lesson in the shape of a number of model villages in the native reserve is suggested. [The paper is a useful contribution to our knowledge of native health in tropical Africa.]

A. G. B.

Rose (F. G.) & Chow (J. E.). **A Résumé of the Scientific Work published by Medical Men in British Guiana from 1769 to the Present Day.**—*British Guiana Med. Annual for* 1923. pp. 53–62.

Among the famous men of British Guiana whom the authors praise are Edward Bancroft who, in 1769, in an essay on the Natural History

of Guiana, described leprosy, yaws and guinea-worm ; G. PINCKARD, who in the same year described his own case of yellow fever and an autopsy on that disease ; BLAIR (1835), who wrote of yellow fever :— Its peculiarity of arising in separated and isolated spots in a community could only be explained on the supposition that insects carried the disease ; WARBURG, of tincture fame ; BEAUPERTHUY ; and many surviving "Titans" for whose exploits the paper must be read. It is a fine record of which the authors may well be proud.

A. G. B.

JACKSON (J. H. S.). **Causes of Depopulation among Some Island Peoples.**—*Med. Jl. Australia.* 1924. Jan. 19. 11th Year. Vol. 1. No. 3. pp. 58–61.

The author is a medical officer of the Kaewieng District of the Mandated Territory of New Guinea, which includes the northern half of New Ireland and certain island groups with, in all, a population of 25,000. In every census taken on patrol the deaths were found to exceed the births. Among over 15,000 people in 5 districts the births varied from 11·8 to 41 per mille, the deaths from 39·2 to 65·8. Owing to the conditions in which delivery takes place and the want of rest at that time there is much sub-involution and congestion of the uterus, often followed by acute angled retroflexion, which must render conception unlikely and favour abortion. Other causes of low birth rate are prolonged lactation, unsuitable mating, recruitment of virile men for the plantations.

Syphilis and gonorrhoea are reputed to be common but are actually rare. In over 9,000 examinations gonorrhoea was found but 10 times. As to syphilis, no primary sore nor hereditary syphilis was seen in 15,000 examinations, ulcers which were possibly syphilitic did not yield to specific treatment, para-syphilis was absent, and the author concludes that syphilis if it exists at all is very rare. The scourge of the district is malaria. "Its influence on both birth and death rates is greater than that of all other factors." The spleen index showed nearly 80 per cent. of the population to be infected.

The author mentions also the effect of the adoption of the white man's clothes and habits and the relinquishment of the native practices as tending to lessen interest and loosen the hold on life [cf. RIVERS, this *Bulletin*, Vol. 20, p. 83].

A. G. B.

DE BUEN (Sadi). **Distribution géographiques de quelques maladies parasitaires en Espagne.**—*Ann. Parasit. Humaine et Comparée.* Paris. 1924. Jan. Vol. 2. No. 1. pp. 90–98. With 3 text figs. [41 refs.]

The parasitic diseases of chief general interest in Spain are malaria and kala azar.

Malaria is endemic over about half Spain, judging from the charts here published, chiefly the southern and western provinces. Its distribution is not yet worked out. The annual mortality in the last ten years has been 2,000 or rather less. All three forms are found. The most extensive malarial area is in the province of Cáceres, where in 1923 2,817 cases out of 7,134 were diagnosed by the microscope.

The first case of infantile *kala azar* in Spain was described in 1912. In 1922 the author published a list of 63 cases from 4 inland and 8

maritime departments. He is aware of 88 cases, about a third of which have been discovered in the last year. Oriental sore is less common.

Other parasitic diseases are relapsing fever, a small focus in Cáceres ; icterohaemorrhagic spirochaetosis ; sodoku (case described 1885) ; amoebic dysentery, a few cases ; coccidiosis, one case ; giardiasis, a few cases with diarrhoea ; cestode and nematode infections. In one of the mines, of 478 workmen 338 or 70 per cent. were infected with ankylostomes.

There is a useful list of references.

A. G. B.

POPOFF (Peter). **Some Notes on Medical Conditions in Transcaucasia.**—*Jl. Trop. Med. & Hyg.* 1924. Jan. 15. Vol. 27. No. 2. pp. 13–14.

This is a description of Armenia which lies in Southern Transcaucasia. One result of the war was that cereals could not be obtained, so that land which had been cultivated for cotton was put down to rice, grown by the wet method. A great increase of malaria followed, and the author with Prof. MARZINOVSKY has established anti-malarial stations and an institute for the study of tropical diseases. *Anopheles claviger* and *A. pseudopictus* are common, *A. bifurcatus*, *A. plumbeus* and *A. superpictus* rare. Four species of Phlebotomus have been identified and phlebotomus fever is common. Thirteen cases of pellagra, a disease not hitherto diagnosed, were seen ; nine were in refugees. Leprosy has long existed ; quotations are given from a book published in A.D. 386–7 prescribing regulations for lepers. They are not now segregated. Mediterranean fever, hill diarrhoea and probably sprue were seen.

A. G. B.

DUDGEON (L. S.). **Certain Problems which concern Intestinal Infection and the Intestinal Flora.**—*Proc. Roy. Soc. Med.* (Sect. of Trop. Dis. & Parasit.). 1924. Jan. Vol. 17. No. 3. pp.–1–6. [16 refs.]

Owing to hygienic, climatic and dietetic conditions, intestinal disorders assume greater importance in tropical and sub-tropical countries than elsewhere. The author and his colleagues distinguish two groups of colon bacilli, haemolytic and non-haemolytic ; the latter are the common inhabitants of the normal intestinal tract of man, but in abnormal conditions, such as diarrhoea and colitis, there is a great increase of the former. The intestinal flora has to be investigated with a full appreciation of the factors concerned, such as :—diet, condition of mouth and throat, pathological processes in intestinal or respiratory tracts, diarrhoea or constipation, the influence of purgatives and the time elapsing between the collection of the specimen and the bacteriological examination.

For some time past the author has investigated the intestinal flora, the clinical condition and diet of the patient being fully controlled. The faeces should be dried on sterile porous tiles and work undertaken with a mixture of the dry powder thus obtained [see this *Bulletin*, Vol. 19, p. 84].

P. H. M-B.

Concepción (Isabelo). [In English & Spanish.] **Notes on the Blood Sugar Content of Filipinos. Apuntes sobre glucosa en la sangre de los Filipinos.**—*Jl. Philippine Islands Med. Assoc.* 1923. Nov.–Dec. Vol. 3. No. 6. In English pp. 285–291. [16 refs.] In Spanish pp. 337–341.

De Langen and Schut in Batavia obtained an average of 0·16 per cent. of sugar in the blood of normal Javans and almost the same figure for Europeans resident in Java, 30 to 70 per cent. higher than the corresponding figure in Europe; they suggest that the excess is of climatological origin (this *Bulletin*, Vol. 9, p. 259; and Vol. 13, p. 43). McCay found an average of 0·13 per cent. in Bengalis in Calcutta, and attributed the high percentage to an excess of carbohydrates in the diet. [The figure given for Europeans in Europe is 0·08 per cent.] The author's work was done on Filipinos, 80–90 per cent. of whose diet consists of rice. Thirty-four subjects, all healthy, were studied. Table 4 compares the three series mentioned for natives, and Table 5 this series and the Dutch series for Europeans.

Table 4.—Blood Sugar in the Natives of the Tropics.

Author.	Method.	Nationality.	Cases.	Mgs. of sugar per 100 cc.		
				Min.	Max.	Average.
De Langen & Schut	Bang	Javans ..	16	110	210	152
McCay	Michaelis-Rona	Bengalis	50	87	200	130
This series ..	Myers-Bailey	Filipinos	30	85	157	123

Table 5.—Blood Sugar of Europeans and Americans of long Residence in the Tropics.

De Langen & Schut	Bang ..	European	9	125	205	158
This series ..	Myers-Bailey	American	11	110	152	134

The author's figures are much lower than those of McCay and of De Langen and Schut. The amount of sugar in Europeans long resident in the Philippines was 15 per cent. less than that of Europeans in Java; though the figure is higher than the American standard in the U.S.A., the author would ascribe the difference to causes other than climate.

A. G. B.

Holtappel (K. J.). **Bloedsuikerbepalingen.** [Bloodsugar Determinations.] —*Geneesk. Tijdschr. v. Nederl.-Indië.* 1924. Vol. 64. No. 1. pp. 101–115. [12 refs.]

Holtappel recommends the method of Hagedorn-Norman-Jensen, the technique of which is described in detail; it is said to be simple, trustworthy and quick. The bloodsugar values he obtained agree with European figures. The author ascribes the higher values found by de Langen and Schut (see this *Bulletin*, Vol. 13, p. 43) in healthy individuals in Java to faulty technique, especially to the possibility of reoxidation of cupro compounds in their modification of Bang's method.

W. J. Bais.

i. Taylor (J.) & Douglas (A. R. J.). **The Deterioration of Insulin in India.**—*Indian Med. Gaz.* 1924. Jan. Vol. 59. No. 1. pp. 26–27.

ii. The British Drug Houses Ltd.; Allen & Hanburys, Ltd. **Insulin in the Tropics.** [Correspondence.]—*Lancet.* 1924. Jan. 12. p. 101.

i. Trial of insulin from two sources, American and British, led the authors at Rangoon to infer that it had retained but a small portion of its original potency. After clinical failure tests were made on rabbits with similar results. In neither instance had cold storage been employed in transit or in India. It is suggested that Government control and examination of insulin supplies may be advisable.

ii. The writers believe that "A.B." insulin does not suffer loss of activity in the tropics. The contents of two bottles returned from India with a report of loss of activity were tested in London and found to be as potent as at the first. Cold storage had not been used. They give figures in support of the suggestion that the quantitative reaction of rabbits in India is not that of temperate climates; the blood sugar does not undergo the same reduction.

A. G. B.

Vasavada (D. M.). **The Dosage of Sodium Cacodylate Intravenously.**—*Indian Med. Gaz.* 1924. Mar. Vol. 59. No. 3. pp. 131–132.

The author advises the use of large doses of sodium cacodylate, 10 to 30 grains twice a week, intravenously in 5 cc. of distilled water. He states, without details, that the class of cases benefited includes anaemia, some forms of sprue, quinine-resistant malarial cachexia, psoriasis, syphilis, chronic bronchitis and phthisis, and characterizes the results as "striking." Toxic effects were never seen.

A. G. B.

Connor (F. P.). **The Use of Intravenous Injections of Iodine in the Treatment of Septicaemia and other Septic Conditions.**—*Indian Med. Gaz.* 1924. Mar. Vol. 59. No. 3. pp. 125–126.

The author's experience of treatment by intravenous injections of iodine goes back to 1913 when he published an account of cases of plague so treated (this *Bulletin*, Vol. 2, p. 72). He has since used intravenous iodine in many cases of surgical sepsis in his wards and believes it to be of value. He gives small doses and suggests that they act by stimulating the thyroid gland. He refers to Jeudwine's paper and notes that he has not observed the hyperleucocytosis described by Jeudwine (see this *Bulletin*, Vol. 21, p. 408). A discussion elicited the facts that the treatment had been tried and found wanting in kala azar and malaria.

A. G. B.

Muench (Hugo). **Report of a Case of Illness after Treatment with Chenopodium, with Reference to the Possibilities of Toxic Effects following the Administration of Magnesium Sulphate.**—*Jl. Amer. Med. Assoc.* 1924. Jan. 5. Vol. 82. No. 1. p. 33. [3 refs.]

A child of 6 under chenopodium treatment at Surinam received one ounce of magnesium sulphate in the morning and another a few

hours later, in 25 per cent. solution. The bowels were not moved. In the evening she became comatose but eventually recovered. It is suggested that the toxic results were due to paralysis of the bowels by a large ,concentrated dose of magnesium sulphate which would favour the absorption of the chenopodium. The dose was too large and too concentrated.

A. G. B.

Bose (J. P.) & Mukerji (Arun Kumar). **Liver Function Tests and Carbon Tetrachloride.**—*Indian Med. Gaz.* 1924. Mar. Vol. 59. No. 3. pp. 127–130. With 1 chart. [20 refs.]

The authors discuss the various methods which have been described for testing the functional activity of the liver and especially the laevulose tolerance test. They recount the results of the various observers who have studied the action of carbon tetrachloride on the liver, and finally give a table of nine cases of ankylostomiasis treated at Calcutta with 70 minims of pure carbon tetrachloride followed by a purge, the course being repeated the next day, in which the results of laevulose tolerance tests are expressed. The interval between the last dose and the test varied between 1 and 18 days. No damaging effect on the liver whatever was shown.

A. G. B.

Remlinger (P.). **Sur le Géophagisme au Maroc.**—*Bull. Soc. Path. Exot.* 1924. Feb. 13. Vol. 17. No. 2. pp. 149–152. [3 refs.]

The author has observed the habit of earth-eating or geophagism at Tangier, chiefly in small children of the middle classes ; he regards it as a perversion of taste. To break the habit is very difficult, but it is generally lost at the age of 8–10. It rarely leads to dyspepsia, fever, or infection, which is remarkable. Though Arab, Jew and European children play together earth-eating is only seen in Mussulmans.

[Nothing is said of verminous infections in these children.]

A. G. B.

Duncan (J. T.). & Manson-Bahr (P. H.). **The Action of "Bayer 205" on the Tissues in Fatal Cases of Kala-Azar and Trypanosomiasis.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1923. Dec. 13. & 1924. Jan. 17. Vol. 17. Nos. 6 & 7. pp. 392–399. (Discussion pp. 399–400.) With 3 figs. [16 refs.]

Reference is made at the outset to two conflicting instances of the conjectured results of the treatment of kala azar with Bayer 205 ; in one, recorded by Mollow, the patient succumbed after a dose of 0·25 gms., in the other, reported by Yorke, the patient received 1·75 gm. in three doses and subsequently gained 14 lb. weight within a month and was regarded as cured.

In the case here reported the patient was a young Lascar admitted with a history of 3 weeks' fever. Except for a little anaemia he exhibited no signs or symptoms of disease during the first fortnight in hospital, not even a rise of temperature ; but examination of material obtained from liver puncture and of faeces led to respective discoveries of leishmania and of ankylostome eggs. Gradually after that first fortnight a characteristic pyrexia became established, the spleen increased to the level of the navel, and notwithstanding antimony treatment the patient's condition became serious. Then an

injection of 0·5 gm. of Bayer was given and was followed by injections of 1 gm. at weekly intervals until a sum of 3·5 gm. had been received. After the 2nd injection there was a remarkable diminution in the size of the spleen; but immediately after the 4th and last, the pulse collapsed, there was air hunger, the temperature rose above 104° F., the anaemia became intense, albumen and casts appeared in the urine, and death soon followed.

At the autopsy 12 hours after death, besides enlargement of liver and spleen and degenerated leishmania in the bone-marrow (only), the lungs were hyperaemic and showed sporadic haemorrhages and small consolidations (clots) and the kidneys were congested and showed extensive degeneration of the cortex.

A very minute and particular account is given of the morbid histology of all the viscera and other organs, but it must be sufficient here to summarize the account of the changes observed in the kidneys and lungs which alone are attributed to the action of the drug. The changes in the kidneys consisted of cloudy swelling and deposit of fatty granules in the epithelium of various parts of the tubules, increase of the interstitial fibrous tissue, vascular engorgement, and petechial haemorrhages and small necrosed patches in medulla and cortex. The lungs showed capillary engorgement and blocking of the alveoli with haemorrhages and with masses of cells, polymorphonuclears being rare and evidence of inflammation absent.

The pathological changes observed in a case of trypanosomiasis that ended fatally after treatment with Bayer 205 are described.

The patient in this case received 33 gm. in the course of six months, 15 gm. having been given in the month preceding death. Here, too, the kidneys were enlarged and appeared dark and congested as in acute nephritis, and there was cloudy swelling of the convoluted tubules, and the lungs also were intensely congested, especially at base. Furthermore, there was general atrophy of the skin, especially of the forearms, and hyperkeratosis of the soles of the feet.

Finally, in order to determine more precisely the action of the drug, the authors administered poisonous doses to six white mice, of which four received a single dose proportionate to 1 gm., and two a single dose proportionate to 1·4 gm. per kilogm. of body-weight, death following in the course of 4 to 15 days. The changes observed, post mortem, were as follows: In the *liver*, venous engorgement and general cloudy swelling; foval necroses often containing haemorrhages; very slight perivascular round-cell infiltration; intracellular fatty deposits varying from granules to large droplets. In the *kidneys*, extensive degeneration and exfoliation of the epithelium of the convoluted and other tubules of the cortex; hyaline casts in some of the tubules; a few necrotic foci; vascular engorgement, minute haemorrhages, and remarkable perivascular round-cell infiltration throughout the cortex. In the *lungs*, some engorgement of the alveolar capillaries and small areas of haemorrhage into the alveoli. In the *spleen*, engorgement but not haemorrhage. In the *stomach* and *intestine*, minute sporadic patches of congestion and doubtful submucous haemorrhages. In the *brain*, minute haemorrhage in the cortex and white matter of cerebrum and cerebellum. No change was observed in the heart.

The changes observed in these mice suggest that the vascular endothelium is selectively affected by Bayer 205.

A. A.

TIMPANO (P.). **Sopra alcuni casi di Amebiasi, Anchilostomiasi, Febbre Maculosa e Adenite inguinale epidemica.**—*Giorn. di Clin. Med.* Parma. 1924. Mar. 20. Vol. 5. No. 4. pp. 133–136.

The author records briefly some of the cases he met with in Calabria in 1923. Of 7 cases of amoebiasis 5 were diagnosed by the finding of

amoebae in the stools ; the remaining 2 are placed in the same category because they cleared up on administration of emetine. The case reported as spotted fever showed a macular, dark red rash on the neck, trunk and limbs, involving also the palms and soles. There was fever with headache and general pains, and later considerable prostration. The temperature was only 38°–38·5°C., and became normal in a fortnight ; there was no desquamation. Under Epidemic Inguinal Adenitis mention is made of 12 cases, five with unilateral involvement. Each suffered from a rise of temperature lasting for 1–3 days and the glands remained swollen for six weeks. Suppuration occurred after three to five weeks in five of the patients. No cause was discovered for the enlargement of the glands, but the author is of opinion that the condition differs from that described as climatic bubo. The "epidemic" was not alarming ; one case occurred in June, three in September, seven in October, and the remaining one in November.

H. Harold Scott.

Le Dentu (R.). **Paludisme et ver de Guinée en Haute-Volta. Prophylaxie commune.**—*Bull. Soc. Path. Exot.* 1924. Jan. 9. Vol. 17. No. 1. pp. 104–107.

The two serious endemic diseases of Haute Volta (W. Africa) are malaria and guineaworm ; in the earlier months of the rainy season more than half the population of the villages is affected with them. The country naturally would be healthy ; but it has been made malarious and dracunculous by the waters that stagnate in ponds and in the hollows made by the natives in getting earth for their mud huts. As there are no streams the natives have to drink this water and use it for all other proper and improper purposes.

A. A.

Giemsa (G.) & Sei (S.). **Ueber die Einwirkung von Natronsalzen verschiedener Bismutylweinsäuren auf Trypanosomen und Rekurrensspirochäten im Mäuseversuch.** [Action of the Sodium Salt of Various Bismuthyl Tartrates on Trypanosome and Relapsing Fever Infection in Mice.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Jan. Vol. 28. No. 1. pp. 20–26. [7 refs.]

The authors refer to previously published experiments with these bismuth salts. The salts employed are named natrol, B5 and B7, and they were given subcutaneously. The trypanosome infections were nagana, mal de caderas and dourine. The results are set out in tables. Dourine trypanosomes were affected not at all by natrol and little by B5 and B7. Mal de caderas, little by natrol, more definitely by B5 and 7. Nagana not at all by natrol, strongly by B7, and still more strongly by B5. Of 6 mice thus treated one was permanently cured, but less than half the effective dose of B5 had action, driving the trypanosomes for some days from the blood, in two instances twice. The authors suppose that the reappearance of parasites in the blood is accompanied by an increase of temperature which causes more of the drug to be absorbed from its "depot" under the skin. The action of these three substances increases with the bismuth content. In the relapsing fever infections, in which treatment was begun before the parasites appeared, the result of B7 and B5 injections was that in the first attack spirochaetes were less numerous in the blood

than in the controls, and the first relapse was as a rule cut out, the next relapse occurring. It is planned to repeat these experiments substituting intravenous for subcutaneous therapy.

A. G. B.

RAMANATHAN (S.). **Notes on Some Methods of Malingering adopted by Prisoners.**—*Jl. Ceylon Branch Brit. Med. Assoc.* 1923. Sept.–Dec. Vol. 20. No. 3. pp. 43–44.

This is a catalogue of ailments feigned by malingering prisoners, apparently compiled from the author's experience. (1) Conjunctivitis, induced by lime, soap, tobacco, and irritant plant-juices, of which two, known as "varra" and "olinda," sometimes produce very serious effects. (2) Otitis, produced by putting small pieces of stone and other mechanical irritants into the auditory meatus. (3) Tumour of the cheek simulating mumps, said to be caused by application of an irritant leaf. (4) Pains and aches in chest and back. (5) Appendicitis, sometimes shammed by educated prisoners. (6) Diarrhoea and dysentery, produced by irritants, or by mixing stools with urine or water, and blood spat from gums. (7) Piles and prolapse caused by constant straining. (8) Cellulitis, by subcutaneous application of "olinda" juice, or by deliberately making a clean wound septic, or by strangling a limb with a bandage. An experienced malingerer under long sentence often prefers practising professionally among enterprising fellow prisoners to adventuring on his own account, fees being paid in surreptitious drowsy narcotics.

A. A.

MOSS (K. Neville). **Some Effects of High Air Temperatures and Muscular Exertion upon Colliers.**—*Proc. Roy. Soc.* 1923. Aug. 1. Vol. 95. Ser. B. No. B666. pp. 181–200. With 1 plate.

Prof. Moss of Birmingham University has performed a useful piece of work on this subject, which, though it has no special bearing on tropical conditions (*e.g.*, heat stroke) has considerable interest in itself. It was no small feat to get hold of sixty colliers of sufficient intelligence and patience to undertake a return of their daily diet for 7 to 10 days, and the results are sufficient to give a trustworthy average. No one can urge that they are underfed and the daily calorie supply works out as 4,711. This is in accord with what we know of the requirements of men in hard work. The liquid drunk increases with increase of temperature, especially over 70°F.; this is related to the amount of sweating, and one collier drank as much as 13·6 pints a day. The amount of solid food also increased with rise of temperature; this is a little unexpected and still more so is the larger proportion of salted food (such as ham) ingested. The work included observations on the amount of respiratory exchange, but the figures only relate to one man, and so are of less importance. More interest attaches to the question of sweating; the increase of sweat leads to a great rise in its sodium chloride content. So much so that in extreme cases the urine contained little or none. This is connected further with the amount ingested in salted foods, which seem instinctively taken, and with a semi-political problem whether a salt tax in hot climates is justifiable. This last consideration is accentuated when Prof. Moss comes to the last section of his work, viz., miner's cramp, a by no means uncommon complaint

in other workers (*e.g.*, stokers) in high temperatures. It is due to continuance of hard work especially among those not physically fit, combined with the excessive drinking of water. In fact, it is an example of water poisoning which can be artificially induced in animals (Rowntree). It ought to be possible to give the colliers a drink containing enough salt to balance the loss of salt by sweating. Even the pit ponies are wise in this respect and lick the rock salt which is provided. Accordingly a selected number of men were given salt and water (10 grams of NaCl to the gallon) and the results were most promising and usually led to disappearance of the cramp. The man in the street would hardly select a saline draught to alleviate thirst, because it is an article of faith with him that salt breeds thirst, but the man in the street, especially if the street is rich in liquor shops, evidently wants educating, and the subject of water intoxication presents him with a new field for his activity.

W. D. Halliburton.

Kiewiet de Jonge (G. W.). **Over het lichaamsgewiche van Europeanen, Indo-Europeanen en Chineezen in Nederlandsch-Indië.** [On the Body Weight of Europeans, Eurasians and Chinese in the Dutch East Indies.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1924. Vol. 64. No. 1. pp. 83–100. With 11 text figs. [2 refs.]

As medical adviser of a life insurance company having filed reports at his command the author calculated the average weight in relation to height and age of 5,992 Europeans, 4,092 Eurasians and 1,256 Chinese, all males, accepted by the company as satisfactory risks. The results, which differ considerably from the European and American tables generally used by medical advisers, are represented in graphs, which should be consulted in the original paper. The weights of Eurasians and Chinese are as a rule much lower than those of Europeans.

W. J. Bais.

Sergent (Edm.), Parrot (L.) & Donatien (A.). **Une question de terminologie: *Immuniser* et *Prémunir*.**—*Bull. Soc. Path. Exot.* 1924. Jan. 9. Vol. 17. No. 1. pp. 37–38.

Distinctive terms are here proposed for (*a*) true, permanent, sterilizing, solid, immunity, characterized by total disappearance of the attacking microbe and impossibility of re-infection; and (*b*) immunity of equilibration or tolerance, characterized by chronic resistance to a microbe that is not completely vanquished, and that, if at last overcome, leaves the way open for re-infection. For absolute immunity the distinguishing term proposed is "immunity" brought about by a process of "immunization" or "vaccination," with verbs to correspond; and for relative immunity, "premunition" brought about by a process of "premunition," with corresponding verb. [Unfortunately English words corresponding with "premunition" and "premunir" do not at present exist, and English equivalents of those words have pre-contracted associations.]

A. A.

Varenne. **Hôpital et dispensaire français de Smyrne en 1922.**—*Arch. Méd. et Pharm. Nav.* 1924. Jan.-Feb. Vol. 114. No. 1. pp. 62–67.

This short report is to a considerable extent occupied with the disasters that overtook Smyrna in September 1922, of which the hospital appears to have suffered a full share. There is little medical news of general interest.

The dispensary is said to have been extremely popular, the daily number of out-patients being from 150 to 200. In the hospital 347 cases were treated, the total number of days of treatment being 5,634. Beyond the mention of an epidemic of scarlatina nothing is said of any unusually prevalent disease during the year.

A. A.

Zschucke. **Ueber die Wirkung von Zymarin bei Herzschwäche.** [The Action of Zymarin in Heart Weakness.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1924. Jan. Vol. 28. No. 1. pp. 33–34.

The author finds that cardiac weakness, especially that of severe ankylostomiasis, is relieved by ingestion of Zymarin, the active constituent of *Apocynum cannabinum*, of the firm of Bayer, Leverkusen, after which it is safe to give vermifuges. He relates two cases in which he administered the drug by intravenous injection.

A. G. B.

Muller (H. J.). **Observations of Biological Science in Russia.**—*Scientific Monthly.* 1923. May. Vol. 16. No. 5. pp. 539–552. With 5 text figs.

The author, from observations made chiefly in Moscow, gives us an impression of Russian biologists quite unlike the Mantuan apothecary of the tragedy, in tattered weeds, with famine in his cheeks, worn to the bone with misery and contempt, that we recently have been picturing to ourselves. He thinks nothing worse than that they are considerably obstructed by their isolation and consequent ignorance of what is being done in the scientific world outside. He admits that they have no love for the Government, and that it is not so very long since some of them endured the afflictions of imprisonment and even of impending execution for their political opinions; also that they have had to overcome "almost inconceivable difficulties" of a purely material and mechanical kind in getting their scientific institutions established; and furthermore, that their remuneration is pitiful. But the laboratories and the experiment-stations appear to be there, in Moscow and Petrograd, in working order and staffed with experienced men who get from the Government a food-ration and a salary which in the highest grade of employment slightly exceeds that enjoyed by Goldsmith's Vicar of Wakefield.

In Moscow eight such state institutions for different branches of biology have been established under the Ministry of Public Health since the revolution. The author mentions the Institute of Experimental Biology and its two annexures in the country, namely, the station for genetics and the hydrobiological station, in which two stations together there are forty or fifty workers: the Institute of Tropical Medicine, with its departments of protozoology, entomology, and helminthology, its medical school and its school for laymen; the handsomely-fitted Biochemical Institute; the Institute of Physics, Biophysics, and Photochemistry, a magnificent and well equipped building with a scientific staff numbering 40; and the Institute of Work, with its 30 skilled assistants and 70 helpers, where the effects of specific kinds of work, mind-testing for specific occupations, and other esoteric branches of physiology are studied.

At Petrograd the author visited only the Bureau of Applied Botany, which has utilized the neighbouring estates of the deposed nobility for its various projects, the palace of a fallen Grand Duke being now devoted to the study of genetics. Here he heard at first hand a story

having morals so obviously multifarious that we forbear to draw them. The story is that the publication of a paper by a worker in this institution has been stopped by the revolutionary government because it expresses views on the influence of predetermined elements in the evolution of the germ which are held to be subversive of the doctrine of Natural Selection. After this, the author's sanguine account of the enterprises of official science in Russia becomes for us sicklied o'er with the pale cast of thought, and we can but emphasize his lamentation of the present deplorable isolation of Russian biology and endorse and support his plan for relieving it. This simple plan is that we individually should supply the Russian institutions with all the reprints and back numbers that we can spare. To avoid customs duty they should be addressed not to individuals, but to institutes, and the author has published in *Science* of 20th April, 1923, a list of fitting institutions.

A. A.

Atkins (W. R. G.). **The Hydrogen Ion Concentration of the Soil and Natural Waters in Relation to Diseases other than Bacterial.**—*Parasitology.* 1923. June. Vol. 15. No. 2. pp. 205–210. [20 refs.]

An argument, based on certain known facts regarding the influence of the hydrogen-ion concentration of water and soil on certain animals (particularly mosquito larvae and snails), advocating the importance of measurements of hydrogen-ion concentration by field workers in studying the distribution of animal species.

A. A.

Rippon (T. S.). **The Effect of Tropical Climate on Physical and Mental Efficiency.**—*Proc. Roy. Soc. Med.* (War Section). 1923. Aug. Vol. 16. No. 10. pp. 45–54. With 2 charts in text. [18 refs.]

An essay on visual fatigue in India and Egypt from the standpoint of the R.A.F. Medical Service, with some considerations on the impairment of mental efficiency induced by a tropical climate, again with the pilot in mind.

A. G. B.

Phipson (E. S.). **The Pandemic of Influenza in India in the Year 1918 (With Special Reference to the City of Bombay).**—*Indian Med. Gaz.* 1923. Nov. Vol. 58. No. 11. pp. 509–524. With 4 charts. [13 refs.]

The author of this interesting paper reminds us that in the space of two months of 1918 influenza killed no fewer than eight millions of Indians. He was Assistant Health Officer in Bombay City and writes of the epidemic as he saw it there. After some consideration of previous epidemics, and especially that of 1890, he points out that in the latter half of 1918, whereas plague and malaria incidence was below normal, the stocks of food-grains in India were low and prices correspondingly high, milk was scarce from lack of fodder and medical personnel sparse owing to the calls of the war. Influenza appeared in Bombay in June, but whether it was imported or developed in the Province is uncertain. In February and March a similar disease was

reported from the Thana district and the mortality rates were above the normal for the time of year ; on the other hand, though the first cases to be noted in Bombay occurred on a transport in dock, this was not till there had been free communication with the shore for 48 hours.

First phase.—This was studied from the records of 10 municipal dispensaries which furnished 3,000 cases, from those of private practitioners and from large firms, schools, etc. The origin of the earliest cases was in the docks and shipping and the lowest incidence was among the health department sweepers, Hindus of the lowest caste, only 4 per cent. of whom were affected. In the second wave, however, they suffered severely. The incidence among children and young adults was heavy, 70 per cent. of the cases treated at dispensaries, and the European incidence was 17, as against 29 per cent. for Indians. The symptomology presented nothing unusual. Normally, the deaths between June 15 and July 15 would have amounted to 3,100 ; they actually reached 4,740 ; the difference, 1,640, is taken to be the influenza mortality. A chart shows the effect of the epidemic on the mortality from various diseases. There is a significant rise in " ague and remittent fever," " debility and old age," and especially " respiratory diseases." The case mortality is reckoned as about 5 per cent., or 1·5 per 1,000 living.

Second phase.—The second wave broke on September 10, after an interval of freedom of about two months ; it apparently came from the Deccan highlands. By the 30th the daily mortality for the city had risen from the usual 102 to 712, and on October 6 reached 768. The highest mortality in a day had previously been 433—in a bad plague epidemic. By November 11 the death-rate had become normal. A description is given of the efforts made to cope with the epidemic—a publicity campaign, free milk, pneumonia jackets, emergency dispensaries, gifts of blankets and the like, and the appeal for co-operation had a wonderful response. The second resembled the first phase, but fatal complications, especially bronchopneumonia, were far more frequent ; " it seemed to be as fatal to strong adults as to young children and to the old and debilitated." Glen Liston found that the pneumococcus and influenza bacillus were the only pathogenic organisms at all constantly met with in fatal cases and were almost invariably in association, and the same was recorded from Karachi. The susceptibility of the Indian to pneumococcus toxaemia is well known. Streptococci, commonly found in England, were in India rarely met with. The mortality of the 62 days of the second phase, calculated in the same way as before, amounted to 14,678, equivalent to 13·3 per 1,000 of the estimated population, or more than 3 times that of the urban population of England and Wales in the three epidemic waves 1918-19. But Bombay city suffered slightly compared with other parts of India, the Central Provinces, Delhi, Bombay, Punjab and N.W. Frontier having all a rate over 40 per mille, the first two being 56 and 55. Bengal was lowest with 4·7, and the total for British India was 20·6 per mille. For the mortality, 36 per cent. of the deaths occurred among people 20 to 40 years old, and the figures for the respective communities were as follows :—

Europeans	8·3	Indian Christians ...	18·4
Parsees	9·0	Caste Hindus ...	18·9
Eurasians	11·9	Mohammedans ...	19·2
Jews	14·8	Low Caste Hindus ...	61·6

This is the order and degree in which mortality generally affects the communities of India.

Finally, the problems of prevention and control in an oriental city are discussed. With our present lack of knowledge it is not possible to keep the disease out. The measures considered are—an International Bureau of Public Health which would report the incidence of the disease; quarantine (impracticable except as regards isolation of severe cases in hospital); notification (useless in India, where the doctors are chiefly native practitioners of Eastern systems of medicine); improvement of registration of mortality statistics (practicable in Bombay city); methods of publicity, including the making known of emergency arrangements; protection of medical and nursing personnel by inoculation, masks, treatment of nasopharynx and the like (vaccine prophylaxis is *sub judice*); closure of schools and cinemas (schools offer a better environment than home, but cinemas are a real danger); organization of a domiciliary nursing service (hardly feasible owing to prejudice and shortness of personnel); provision of institutional treatment on large scale, which is in the author's opinion one of the most efficient methods of reducing mortality.

"The elementary school of the future," he writes, "might well be designed with a view to possible adaptation as a hospital in case of a serious emergency such as arose in 1918. Experience has shown how little is required to adapt a modern school building to hospital use, and a few minor variations in initial design, for instance, such as increased width of staircases to facilitate the handling of stretchers, would add very little to their initial cost and very much to their utility as emergency hospitals."

The author admits that the amelioration of the appalling housing conditions of the slums of Bombay is of the highest importance, but anticipates another outbreak of influenza before much progress can be made in this direction.

A. G. B.

i. Bates (Lewis B.) & St. John (J. H.). **The Bacteriology of the Influenza Epidemic on the Canal Zone, March-April, 1920.**— *Proc. Med. Assoc. Isthm. Canal Zone.* 1920. Jan.-Dec. Vol. 13. Pts. 1 & 2. pp.17–24. [1 ref.]

ii. Connor (Roland C.). **The 1920 Epidemic Influenza at Ancon Hospital.**— *Ibid.* pp. 79–92. With 2 charts.

i. The 400 patients from whom cultures were made were patients in Ancon Hospital. Media were used which gave optimum conditions for the recovery of *B. influenza*, the pneumococcus, and *Streptococcus haemolyticus* and routine blood cultures, nasopharyngeal and sputum cultures and autopsy cultures were made.

Conclusions :—

"1. No one organism has been predominant in our cases. A variety of organisms has been recovered from lesions which were apparently the same, the appearance of the lesion being no criterion as to the organism present.

"2. The *Streptococcus hemolyticus* has been found in but a small proportion of our cases and when found they were few in number and not widely distributed. We may safely say that the *Streptococcus hemolyticus* has played an unimportant part in this epidemic.

"3. The influenza bacillus has been recovered from 15 per cent. of the throats cultured during this epidemic; during an examination of 140 throats in this hospital made in February, 1919, this organism was not recovered. The increase in positive cases seems to be about equally divided between influenzae and non-influenza patients.

"4. The pneumonias in our fatal influenza cases seem to have been caused by a variety of organisms. In no instance were the lungs sterile and in most cases some of the organisms found in the upper respiratory tract were also found in the consolidated lung tissue.

"5. Although diffident about offering any opinion on account of the incompleteness of our work we quote the following paragraph of Cummins as stating our views at present:

"'The whole clinical and pathological picture becomes intelligible if we can postulate a primary etiological agent acting locally upon the respiratory surfaces and generally through its toxic products in such a manner as to prepare the way for invasion by the prevailing respiratory flora.'"

ii. The total admissions were 601, the deaths 33, or 5·4 per cent., pneumonias 52, or 8·6 per cent., of which 26 were fatal. There were 175 whites and 426 blacks; 251, or 41·7 per cent., were between 20 and 30 years of age. Autopsies were made in 27 instances. Conclusions reached were that influenza and its complications in the tropics are characteristically the same as in the temperate zone, and that the mortality from pneumonia is the same as in the U.S.A.

A. G. B

HOFFMANN (W. H.). **Das Blutbild der Influenza in den Tropen.**—*Muench. Med. Woch.* 1923. Sept. 21. Vol. 70. No. 38. p. 1199.

The author believes that in the tropics it is more usual to get a pure influenza infection than in temperate regions where other disease organisms cloud the picture. He has observed 55 cases in hospital in Havana, has made daily blood examinations, and believes that the changes described, which last at least a fortnight, are characteristic of the disease. Throughout there is a pronounced leucopenia. At first eosinophiles are absent, but with recovery they appear and soon are as numerous as 4 or even 8–9 per cent. There is now relative lymphocytosis. The Arneth index is at first high and then below normal. He claims that by these blood changes he can distinguish influenza from other tropical fevers.

A. G. B.

"HAEMOGREGARINES" IN MAN.

With reference to Dr. WENYON'S article, "'Haemogregarines' in Man, with Notes on Some Other Supposed Parasites" (this *Bulletin*, Vol. 20, p. 543), in which CASTELLANI'S *Toxoplasma pyrogenes* is discussed and the opinion given that it is not a protozoon but of vegetal origin, a letter has been received from Dr. CASTELLANI in which, referring to his paper (*Jl. Trop. Med. & Hyg.*, 1914, April 1, Vol. 17, pp. 113–4) he says:—"Some of the bodies depicted in rows 5 and 6 of the coloured plate in that paper may be nucleated micro-eritrocytes, but as regards the micro-photograph 3 and 4, and the bodies depicted in rows 2 and 3, I do not think there can be any doubt that they are parasitic protozoa. . . . Dr. Wenyon never saw the original preparations."

REVIEWS AND NOTICES.

MENSE (Carl). **Handbuch der Tropenkrankheiten. 3te Auflage. 1er Band.**—xviii+713 pp. With 341 text figs., 6 black-and-white and 5 coloured plates.—1924. Leipzig. Verlag von Johann Ambrosius Barth. [Price, Mks. 56; Bound, Mks. 60.]

i. Die Krankheitsüberträger und Krankheitserreger unter den Arthropoden (von Dr. Adolf EYSELL). [Arthropods as Transmitters and Producers of Disease.] (pp. 1–469. With 7 plates and 302 text figs.)

i. Of this huge volume no less than 469 pages, each containing between four and five hundred words, are devoted to arthropods of medical and sanitary interest. A great deal of it is bibliography, which is on a colossal scale, that of the Culicidae, for instance, occupying as many pages (63) as are given to the family itself in all its numerous essentials and including references to many papers that are of very little use to a medical man. In his treatment of the subject the author arranges arthropods in two categories, namely (1) those that transmit or disseminate pathogenetic organisms, and (2) those that are pathogenetic in their own properties. In the former category he includes ticks, lice, bugs, fleas, blood-sucking flies, Cyclops and some minor miscellanea; in the latter category Linguatulida, mites, spiders, scorpions, centipedes, dipterous maggots, stinging Hymenoptera and other urticating insects are included. In this arrangement the house-fly receives hardly sufficient attention and the louse perhaps a little too much. In the case of each natural group its pathogenetic importance, morphology, biology and taxonomy are duly considered and then such practical matters as prevention and control, capture, preservation, etc. The whole field is surveyed and a vast amount of information is provided. The book is generously illustrated, the number of figures in the text running to 302, in addition to which there are 6 coloured plates.

A. Alcock.

ii. Angewandte Blutlehre für die Tropenkrankheiten (von Prof. Dr. Victor SCHILLING, Berlin). (pp. 470–702. With 39 figs. & 4 plates).

ii. Some 10 years ago we had the pleasure of reviewing this considerable contribution to the study of tropical disease from the pen of the same author, who at that time styled himself Schilling-Torgau (see this *Bulletin*, Vol. 3, pp. 567–570).

The substance of the text, as well as the illustrations, are practically unchanged, and, as before, considerable space is occupied by the very extensive biliography. The addition of over 60 pages is accounted for by the insertion of new methods of blood examination, such as the dark-ground illumination, the practical application of the thick-drop method, Van den Bergh's reaction, etc. The high standard maintained throughout this section, as well as the exhaustive manner in which the subject is treated, has undoubtedly rendered Schilling's work the standard authority on tropical haematology.

P. H. Manson-Bahr.

LEAGUE OF NATIONS. Health Organization. **Interim Report on Tuberculosis and Sleeping Sickness in Equatorial Africa. Submitted to the Health Committee at its 6th Session, May 26, 1923.** [BALFOUR (Andrew), VAN CAMPENHOUT (E.), MARTIN (Gustave) & BAGSHAWE (A. G.).]—122 pp. With 12 maps.

The information collected in this report on tuberculosis and sleeping-sickness in tropical Africa is of such priceless convenience that the shortcomings of its outward furniture cannot but cause surprise: the valuable

substance, in comparison with the style and appurtenance of its public presentation, shows "like some ore among a mineral of metals base." Considerations of expense may perhaps justify crowded lines and parsimonious margins, but nothing can excuse maps dumb of explanatory text and such carelessness in bibliography—where if there be inaccuracy confidence is apt to take flight at once and for ever—as assigns the authorship of the Royal Society's classical Sleeping Sickness Reports, along with several other papers of divers French and British origin, to ZUPITKA and a German source.*

The report on tuberculosis, which fills 28 pages, is an impressive summary of an ominous subject. The fullest and most accurate information comes from the French Colonies, where, thanks to the prescience of CALMETTE, who as early as 1911 realized the magnitude of an impending danger, the disease has been systematically investigated. The present authors, though paying due attention to the work of earlier observers, naturally draw largely on KÉRANDEL'S report of 1922. Although KÉRANDEL does not accept the view that tuberculosis is a recent European introduction into tropical Africa, the disease seems to have become commoner since the European occupation and has increased considerably since the repatriation of native troops who served in Europe during the war—these evidences of increase being most apparent in Senegal, which is the oldest of the French possessions in Africa. In Senegal, too, as also in Dahomey, tuberculosis is known to exist among indigenous cattle. The influences at work in the propagation of infection among the native African communities are considered to be the same as in Europe, namely overcrowding, bad housing, and certain predisposing industries.

In the Belgian Congo tuberculosis is believed to have been non-existent at the beginning of the present century. In recent years, however, so many cases have been reported that copious and stringent preventive legislation has been instituted. Its spread seems to have been insidious, diseases that in lifetime had been treated as pneumonia and dysentery turning out to be acute pulmonary and intestinal tuberculosis. In accordance with established precedent the infection tends to run a rapidly fatal course in this virginal soil.

In the British Colonies there appears not to have been any systematic investigation of tuberculosis such as has been going on in French Africa —except in the case of the mandated territories formerly occupied by Germany, notably Tanganyika Territory, where PEIPER and MANTEUFEL attributed the diffusion of the disease in the first instance to Indians. For the British Colonies proper the authors have had to search the respective annual reports. From these it appears that tuberculosis is established in every colony, though it is said to be not common in Rhodesia and not much in evidence in Uganda; that its inception is generally ascribed to European intercourse, but in Zanzibar to Indians; that it probably is wider spread than is realized, many cases being undetected in lifetime, and that undoubtedly it is spreading; and that it is of a virulent type, working havoc in susceptible material. In Nyasaland it is said to be in process of dissemination by natives repatriated from the South African mines; in Kenya possibly by European invalids repairing to Nairobi in the most mistaken belief that the climate is specifically beneficial; and in Uganda by itinerant Bahima "cowmen." Some interesting information comes from the Anglo-Egyptian Sudan, where ARCHIBALD (in consonance with KÉRANDEL in French Africa) believes the disease to be of ancient origin, independent of Europe.

From the Portuguese possessions little direct information has been collected; but there is Portuguese medical testimony to the effect that tuberculosis is of frequent occurrence throughout Mozambique, particularly in Lourenço Marquez, and that it claims many victims in Angola, particularly in Loanda.

* In justice to the Expert Committee it must be stated that no proofs were submitted to them by the League of Nations Secretariat.

One of the most instructive items of the Sleeping Sickness Report, namely the laboriously-compiled map exhibiting the exact distribution of the disease, is spoiled for lack of imaginative reproduction—but we will not harp upon the subject. Rather would we emphasize the comprehensive excellence of Dr. Gustave MARTIN's summary of the disease in its distribution and administrative treatment in the French possessions. In French West Africa the disease is localized in well-defined areas, this localization being explained by ROUBAUD as being dependent on a locally-varying susceptibility of *Glossina palpalis* to infection. In French Equatorial Africa, on the other hand, the disease is spreading like a plague, striking down all the members of a family as if it were "a family disease favoured by cohabitation" and spread by other biting insects ancillary to the primally-necessary tsetse-fly, and wiping out whole villages. Along the right bank of the lower Congo practically no traces of the aboriginal inhabitants remain. A great part of Dr. MARTIN'S report is devoted to a description of the prophylactic measures that have been instituted. These vary according to local circumstances. In French West Africa, where the infection is limited, discomfiture of the fly by clearing and partial deforestation has been found efficacious, along with the restriction and regulation of traffic. In Equatorial Africa, where there are few areas completely immune from infection, sterilization of the blood of infected persons by trypanocide drugs is the principal aim. For this purpose the territory in question is divided into "prophylactic areas" each about equal in size to 4 to 6 French Departments, and each with its mobile medical staff. By systematic touring cases of sleeping sickness are detected and treated, the standard treatment (for adults) consisting in the injection of two doses of 1 gm. of atoxyl at an interval of 8 days—repeated when necessary. Besides detection and treatment of cases the duties of the itinerant medical officers include searching for the breeding-places of the tsetse-fly and suggesting such measures—partial deforestation, removal of villages, isolation of cases, etc.—as may tend to arrest the spread of the disease. It is an onerous task, the itinerant medical officers being always in the jungle and bereft of all the comforts of society and amenities of civilization. The work of the itinerant medical officers is supplemented by sanitary cordons and observation posts, and in isolation camps and other fixed stations where cases are methodically treated with atoxyl. The prophylactic service has at its disposal three central laboratories, where in addition to the study of trypanosomiasis in all its aspects the technical instruction of doctors and of European and native hospital assistants of the service is systematically carried on. The prophylactic service also keeps in mind the improvement of the general conditions of native life, the encouragement of settled cultivation, and the sanitary education of the native. As an illustration of the activity of this service it may be instanced that in the year 1921, 550,658 natives were examined and 28,589 cases treated from two to five times with a trypanocide in Equatorial Africa, and 7,061 cases were treated in the Cameroons. It is evident from this brief summary of Dr. MARTIN's interesting report, that the French authorities regard the prevention of sleeping sickness not at all as the reserved field of the entomologist or protozoologist, but as being (as in the case of malaria) a great matter of comprehensively-informed sanitary administration.

For its review of Sleeping Sickness in the Belgian Congo, the authors have relied on Dr. VAN CAMPENHOUT, whose map shows the distribution of the disease in that territory, indicating also its local waxing and waning, and who reports that of all the endemic diseases it is the widest spread, and severest. All the principles of prophylaxis—isolation, restriction of intercourse, quarantine stations and treatment, partial deforestation, settled cultivation, transplantation of villages—have in the course of time and experience been tried, and their several difficulties are here reviewed, but the method of detection of infected persons for sterilizing treatment with a trypanocide has gradually established itself as in the circumstances

the most feasible and most efficacious. This treatment is carried out either in quarantine stations and other fixed centres, or by visits to villages. Medical officers are empowered to examine infected or suspected persons practically in any situation. Infected persons must submit to treatment, irrespective of nationality or sex. Suspected persons may be detained for observation. Persons in the late stages of the disease are to be isolated in hospital or quarantine station.

In dealing with Sleeping Sickness in British Colonies the authors have had a formidable task, which, however, has been facilitated by the existence of this *Bulletin* and its predecessor the *Sleeping Sickness Bulletin*, in which a large amount of authentic information is condensed. For this reason it is perhaps sufficient now to indicate that the Report, taking each Administration separately, gives brief résumés of recent observations in those colonies (Gambia, Sierra Leone, Gold Coast, Nigeria, S. Rhodesia, Kenya) where the infection is more or less quiescent and sporadic; some details of its distribution in Tanganyika Territory; much detail of its history in Uganda since 1912; and fairly copious detail of its discovery and progress in N. Rhodesia and in the southern confines of the Anglo-Egyptian Sudan.

A. Alcock.

MEDICAL RESEARCH COUNCIL. Privy Council, Special Report Series No. 38. (Revised.) **Report on the Present State of Knowledge of Accessory Food Factors (Vitamins) compiled by a Committee appointed jointly by the Lister Institute and the Medical Research Council.** 2nd Edition Revised and Enlarged.—171 pp. With 24 figs. 1924. London: H.M. Stationery Office. [Price 4s. 6d. net.]

Carefully considered reports upon such subjects as endocrinology, psychotherapy and vitamins are especially required at the present time. It is essential that these should be free from wild speculation and ill-considered optimism. For this reason alone the present report is to be welcomed by all those interested in the advancement of science. It is a model of impartiality and balanced judgment.

Much progress in the subject of vitamins has been made since the first edition of this monograph was published. Thus the subject of Pellagra has been banished from the present work. "The reason for the omission is that while pellagra must still be regarded as a disease of dietetic origin, no fresh evidence has been brought forward in support of that view, and the latest researches upon the subject point to a quantitative or qualitative defect in the protein of the diet as playing the chief part in the aetiology of this disease."

The animal organism is unable to synthesize vitamin A, the primary source of this factor being the green leaves of plants and marine algae. Xerophthalmia is described as an example of disease due to deficiency of this factor in the diet. It is typical of the careful attitude of the compilers that rickets is not discussed under this heading but receives a chapter to itself.

Vitamin B, or anti-neuritic vitamin, has for its chief sources cereals and edible pulses, in the former the largest deposit being in the germ or embryo. Eggs and yeast are rich in this substance, while the value of milk is debated. The vitamin content of milk varies of course with the cow's diet and at present experimental work on the value of this source has not given unanimous results. So far all attempts to isolate vitamin B have failed.

Concerning Vitamin C or anti-scorbutic vitamin, the authors state "the only important fact known about the origin of this vitamin is that it is produced during the germination of seeds." Experimental scurvy is fully described and splendid tables are presented throughout the work showing the exact value of all the common food stuffs as regards their content of all three vitamins.

Rickets is certainly of sufficient importance to warrant its discussion in a separate chapter. Recent work has proved that there are "two outstanding factors involved in the aetiology of this disease." These are (1) The presence of a vitamin resembling vitamin A in physical properties and in distribution, and (2) the degree of exposire to sunlight. The exact relation between the two A vitamins is well summed up in these words :— "In the present state of our knowledge the nomenclature of the fat-soluble vitamin or vitamins presents some difficulty if confusion is to be avoided. In this report the term vitamin A or fat-soluble A is used to denote the accessory food factor necessary to promote growth, and prevent and cure xerophthalmia (in rats) upon a diet adequate in all other respects. The term anti-rachitic vitamin is used to define a fat-soluble vitamin especially concerned with the calcification of bone. This would appear to have a similar distribution to vitamin A."

A valuable chapter is that devoted to the application of experimental work to the practical problems of human diets. In this connexion emphasis is laid upon the important fact that accessory food factors may be present in the diet in sufficient quantity to avoid the outbreak of deficiency diseases and yet not in sufficient quantity to prevent failure of nutrition and health.

Beriberi as it occurred in our troops in Mesopotamia and the Dardanelles was due to the deficiency of white wheaten bread not being counteracted, as in ordinary times, by a supplementary varied diet.

As regards the inferiority of lime juice to lemon juice in preventing scurvy it is pointed out that in the days when the former gained its great name as an anti-scorbutic measure it was not lime juice at all, but juice obtained from Mediterranean lemons, and it was only later that the West Indian lime came into vogue.

Interesting observations have been made regarding the incubation periods, if such a phrase be allowed, of vitamin deficiency diseases. The period of development of beriberi is from eighty to ninety days while that of scurvy is probably not less than four to eight months. "There is a certain amount of evidence showing that these periods of development may be shortened in case of men performing hard manual work or exposed to damp or cold climatic conditions."

The last chapter deals with the influence of diet on teeth, a subject of the greatest importance at the present time. There can be no doubt that the formation and calcification of the teeth and jaws are greatly influenced by the diet consumed during the growth period.

The Committee upon Accessory Food Factors appointed by the Medical Research Committee jointly with the Lister Institute have produced a report which is admirable in every respect and one which will be for a long time the standard authority. Not the least difficult and perhaps the most ably performed task has fallen to the lot of Professor HARDEN, who has edited the report on behalf of the Committee.

A. Douglas Bigland.

MACGREGOR (Malcolm E.). **Report on the Anophelinae of Mauritius, and on Certain Aspects of Malaria in the Colony, with Recommendations for a New Anti-Malaria Campaign.**—48 pp. With 4 maps, 2 plates and 33 figs. [Not on sale.]

This handsomely reproduced and finely illustrated report of a well-planned and well-executed anti-malarial survey of the island of Mauritius is full of interest. It is in two sections ; in one section are included all the details of the investigation, the differentiation and life-history and bionomy of the four local species of Anopheles in their adult and larva phases, and an account of their breeding places and of various influences operative on these ; the other section contains the practical suggestions for the

control of these mosquitoes. It is proposed here to consider chiefly the first section, as dealing with facts of observation having something more than a local interest.

Prior to this investigation only three species of Anopheles were known to exist in Mauritius, and one of these was supposed to be rare; the author has ascertained that there are four species, namely *A. funestus*, *A. costalis*, *A. maculipalpis*, and *A. mauritianus*, and that all four are very abundant. The available natural breeding-grounds are many and varied—streams, swampy lakes, marshes, ponds, ditches, and flood-waters spilt on impermeable soil; numerous artificial breeding-grounds also are provided by the irrigation-works—reservoirs, channels, excess supply and overflow—of the sugar-plantations, and by the extravagant waste from water-pipes (running taps, etc.). It is noted that none of the Anopheles mentioned breeds in water having a definitely acid reaction.

The very careful survey of breeding-places led to the important discovery that *A. funestus*—a notorious nurse of malaria parasites in India and Africa—is extremely common in Mauritius. Possibly it had escaped the eye of previous explorers by reason of the secretiveness of its larva, which clings closely to covert in shaded waters, or possibly, as the author is inclined to assume, it may be a quite recent importation [the author has not realized that this is only one of a good many interesting and significant facts of zoogeographical distribution all capable of a common explanation]. Whatever be the explanation, the species has now been found all round the coastal fringe, and inland up to a height of 500 feet. The larvae occur in a variety of breeding-places, but never in open unshaded water; they prefer shady spots near the bank [as in Lower Bengal]. Another discovery is that *A. maculipalpis*, far from being rare, is really very common, occurring all round the coastal fringe and inland up to 1,200 feet. The fact that its larvae is indistinguishable from that of *A. costalis* by the unaided eye may account for its having been overlooked. Larvae of *A. maculipalpis* are restricted to seepage water; they may be found in such water even when it is but a film or fraction of an inch in depth and exposed to full sunshine. The adult, which is a malaria carrier, though apparently not of the front rank, goes into houses at night, but was never observed to be active in daytime. Of *A. costalis* it was ascertained that it does not hibernate, but dies down altogether in winter at elevations above 1,200 feet; below that level and on the coastal fringe it is sexually active all the year round. This species frequents houses at night, but is not to be seen in the daytime. It breeds in a variety of waters, both natural and artificial, provided they are not densely shaded; even when the water is partly shaded the larvae prefer the open sunny parts. Of *A. mauritianus* it was observed that it not only goes into houses, but also bites in the open at any time of day or night, and is extremely voracious, although insusceptible to infection with malaria. It breeds in all kinds of natural water.

As regards the effect of existing undesigned influences on the local breeding-grounds of Anopheles, it was discovered by actual observation that larvae were non-existent in streams receiving the effluent—often unpleasant also to human sense—from sugar factories. The homely operations of the dhobi (washerman) had the same inhibitory effect, even on water far down the stream. The influence of natural enemies was looked for, but in vain. Plenty of them—larvivorous fishes and predatory insects—are at work in all the natural waters of Mauritius: they play there their natural part in maintaining that well-apprehended, though subtle and veiled, balance of forces by which a mixed and varied assemblage of conflicting and competing species exist together in the state of nature as a harmonized organic whole. Man can upset this balance or can sweep it away altogether, but he can never be wise enough to control it "in being" for his own ends. The author understands this great natural truth, and he understands also that it in no way conflicts with the simple fact that in a purely *artificial* environment man can foster and utilize a particular species or class of animals for almost any purpose that he pleases; so that

when in Mauritius he found, in their *natural* environment, great numbers of Anopheline and Culicine larvae living in the same natural waters with numbers of larvivorous fishes he felt no surprise, but rather a welcome confirmation of orthodox biological views.

This section of the report also contains an account of a five-days' survey by the author and two skilled coadjutors of Rodriguez, an inhabited island 42 sq. m. in extent and 1,700 feet in maximum elevation, lying 365 miles E. by N. of Mauritius. The island is encompassed by a barrier reef, so that vessels must lie at least a mile off shore, and this circumstance is held to account for the absence of Anopheles by importation. The island is about 10 miles long and has streams in every valley, and swamps and marshy pools on the coastal fringe. In all these natural waters larvae of *Culex fatigans* and *C. simpsoni* were to be found in enormous numbers. The only other species encountered was *Stegomyia fasciata* (= *Aëdes argenteus*), breeding in all the tree-holes, both in the coastal flats and inland up to 800 feet. The author's party made careful search of 26 streams and their associated pools and marshes but could not find any Anopheles larvae. It is interesting to note that in the same search no kind of larvivorous fish could be found. Anopheles, in short, would have been said to be non-existent in Rodriguez but for the fact that an officer once stationed in the island had mentioned having seen it. Attempts to get to the bottom of this statement have not brought explicit confirmation, and extensive collections made recently by another resident officer during about six months have produced nothing but the three species of Culicini mentioned above. The author mentions that chiggers are extremely common in Rodriguez and also that he saw a case that he surmised to be elephantiasis.

The second section of the report, containing well-reasoned recommendations for abolishing Anopheles from Mauritius, prescribes no new principles and is of merely local interest. The author adopts unreservedly the view, pardonable in an enthusiastic entomologist but not so easily and finally acceptable to those who pay due regard to all the facts of history, that the abolition of malaria is purely an entomological problem.

A. Alcock.

BALFOUR (Andrew) [C.B., C.M.G., Director, London School of Hygiene and Tropical Medicine] & SCOTT (Henry Harold) [M.D., M.R.C.P.Eng., London School of Hygiene and Tropical Medicine]. **Health Problems of the Empire. Past, Present and Future.** [No. 5. The British Empire Series. Edited by Hugh GUNN.]—pp. xxi+413. With 9 illustrations. 1924. London: W. Collins & Co., Ltd., 48, Pall Mall. [Price 16s. net.]

Under the heading of Health Problems the authors have given us a bird's-eye view of the sanitary history of the countries that compose the Empire, a clear account of some of the diseases that are most notoriously hurtful to the resources of the Empire, and an instructive and philosophical disquisition on such imperial responsibilities and burdens as maternity and child welfare, alcoholism, and the drug habit. The book will be reviewed at some length in Sanitation Supplement No. 2 (June 30, 1924). Unlike most books on hygiene, it is full of interest and inspiration. It is a book that every medical man who intends to practise in the overseas dominions should possess.

A. Alcock.